

4. ACCIDENT AND EXPOSURE PREVENTION

VES-SFE-20 project activities will present numerous potential safety, physical, chemical, and radiological hazards to personnel conducting these activities. It is critical that all personnel understand and follow the requirements of this HASP. Engineering controls, hazard isolation, specialized work practices, and the use of PPE will all be implemented to eliminate or mitigate all potential hazards and exposures where feasible. However, all personnel are responsible for the identification and control of project hazards associated with their work scope in accordance with Integrated Safety Management System (ISMS) principals and practices. **Hazards shall not be left unmitigated without implementing some manner of controls or abatement (e.g., engineering controls, administrative controls, or the use of PPE).** Project personnel should use STOP WORK authority in accordance with applicable company policies and procedures where it is perceived that immanent danger to personnel, equipment, or the environment exists.

This HASP is to be used in conjunction with applicable company policies and procedures. Where appropriate, these policies and procedures will be incorporated into applicable work controls, JSAs, and RWP.

4.1 Voluntary Protection Program and Integrated Safety Management

The INEEL safety processes embrace the Voluntary Protection Program (VPP) and ISMS criteria, principles, and concepts to identify and mitigate hazards, thereby preventing accidents. All management and workers are responsible for implementing safety policies and programs and for maintaining a safe and healthful work environment. Project personnel will take a proactive role in preventing accidents, ensuring safe working conditions for themselves and fellow personnel, and complying with all work control documents, procedures, and permits.

The ISMS is focused on the **system** side of conducting operations and VPP concentrates on the **people** aspect of conducting work. Both programs define work scope, identify and analyze hazards, and mitigate the hazards and additional information on these programs is available on the INEEL Intranet. BBWI (current primary management and operating contractor) and its subcontractors participate in VPP and ISMS. This HASP includes all elements of both systems. The five key elements of VPP and ISMS and their corresponding HASP sections are as follows:

Voluntary Protection Program	Integrated Safety Management System	Health and Safety Plan Section
Work site analysis	Define work scope	Section 1
	Analyze hazards	Sections 2, 3, 5, and 8
Hazard prevention and control	Develop and implement controls	Sections 2, 3, 4, 5, 7, 10, and 11
Safety and health training	Perform within work controls	Section 6
Employee involvement		Sections 2, 3, and 4
Management leadership	Provide feedback and improvement	Sections 6 and 9

4.2 General Safe-Work Practices

Sections 1 and 2 defined the project Scope of Work and associated project-specific hazards and mitigation. The following practices are mandatory for all project activities personnel to further reduce the likelihood of accidents and injuries. All visitors permitted to enter the project work areas must follow these requirements. Failure to follow these practices may result in permanent removal from the project and other disciplinary actions. The project FTL or STR and HSO will be responsible for ensuring the following safe-work practices are adhered to at the project site:

- Limit VES-SFE-20 project area access to authorized personnel only, in accordance with applicable company policies and procedures.
- Personnel must be aware of and comply with all safety signs, tags, barriers, and color codes as identified in applicable company policies and procedures.
- Be familiar with the physical characteristics of the project site and operational requirements, including, but not limited to the following:
 - Layout of the site, controlled areas, and egress routes
 - Project contaminants, hazards, and PPE requirements
 - Intec and project warning devices and alarms
 - Major INTEC roads and means of access to and from the project site
 - Location of facility emergency response equipment and first-aid supplies.
- Be alert for dangerous situations (e.g., facility alarms, spills, accidents, and injuries) and report dangerous situations and near misses to the FTL or STR. The FTL or STR will make required notification in accordance with Section 10.
- Provide adequate information to the oncoming shift personnel, including equipment and system status and inspection logs, and communicate all systems, monitors, and safety components that are nonoperational and ensure they are tagged as to their appropriate status (e.g., out-of-service or do not use).
- Plan and review all project tasks before initiating the activity. Verify all work control documents (e.g., the RWP, JSA, TPR, or work order) are current and correct for the activity. A prejob briefing is required to be conducted for all activities in accordance with applicable company policies and procedures.
- Conduct all project tasks in accordance with the applicable TPR or work order. All activities will be conducted as stated in the applicable work control document including hold points and requirements for initials upon completion of certain steps (use Type 1 TPR only) or work orders. Use Type 2 TPRs will be followed in a step-by-step sequence.

NOTE: It is the responsibility of all operations personnel to identify, understand, and follow the appropriate work controls for their operational activities.

- All project personnel shall have the authority to initiate STOP WORK actions in accordance with applicable company policies and procedures.
- Personnel shall be familiar with project layout, tools, and equipment for which they are responsible to operate including operating limitations, maintenance, inspection, and manufacturer's operating instructions requirements. Tools and equipment shall only be used for their intended use.
- Understand the PPE requirements for all tasks as stated on the applicable JSA or work order. This includes the proper use and limitation of all PPE. If questions arise about PPE, contact the assigned IH, SP, or RCT as applicable.
- Personnel must wear all required dosimetry as stated on the RWP. This includes any supplemental dosimetry (e.g., electronic dosimeters and albedo dosimeters). Respond to all radiological alarms including but not limited to continuous air monitors (CAMs), criticality system, radiation, and personal contamination monitor (PCM) alarms.
- Avoid direct contact with known contaminated surfaces. Personnel shall not walk through spills or other areas of contamination and shall avoid kneeling, leaning, or sitting on equipment or surfaces that may be contaminated.
- Project personnel shall not eat, drink, chew gum or tobacco, smoke, apply cosmetics or sunscreen, or perform any other practice that increases the probability of hand-to-mouth transfer and ingestion of materials in project areas, except within designated administrative break areas and only after having completed required contamination surveys.
- Practice good housekeeping at all times. Turn in or place tools in the designated storage location after use. Put waste materials in the appropriate waste container or receptacle. If there is a question as to where to dispose of a waste article, personnel should ask the supervisor or the FTL.
- Additional health, safety, and radiological requirements will be identified in project operations technical procedures and work packages.

4.3 Subcontractor Responsibilities

Where subcontractors are used to support VES-SFE-20 project activities, they are responsible for meeting all applicable company policies and procedures flow-down. Additionally, subcontractor are expected to take a proactive role in hazard identification and mitigation while conducting project support tasks. Subcontractors will report unmitigated hazards to the FTL or STR after taking protective actions (within the documented work controls) or emergency protective actions (e.g., evacuate from the area and warn others) as stated in Section 10.

4.4 Radiological and Chemical Exposure Prevention

Exposure to potential chemical, radiological, and physical hazards will be mitigated by using engineering controls, administrative controls, or PPE to prevent exposures where possible or minimize them where engineering controls are not feasible. All project personnel are responsible for understanding the hazard identification and mitigation measures necessary to prevent exposures and complying with hazard and exposure prevention requirements.

4.4.1 Radiological Exposure Prevention – As Low as Reasonably Achievable Principles

VES-SFE-20 project personnel's radiation exposure will be controlled such that exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit. **Unplanned and preventable exposures are considered unacceptable.** All project activities will be evaluated with the goal of eliminating or minimizing exposures. All personnel have the responsibility for following ALARA principles and practices and personnel working at the project site must strive to keep both external and internal radiation doses ALARA by adopting the following external and internal ALARA practices.

NOTE: The INTEC Radiological Department shall establish work controls, initially and as an ongoing activity, throughout VES-SFE-20 project activities. These work control efforts will ensure that workers are adequately protected from known sources of radiation in VES-SFE-20 project activities areas. The issuance of RWPs, establishment and posting of Radiological Controlled Areas (RCAs), and review of project activities by the INTEC ALARA Committee will form the basis for controlling exposure to ionizing radiation during VES-SFE-20 project activities.

4.4.1.1 External Radiation Dose Reduction. Sources for external radiation exposure from radioisotopes in the waste are provided in Table 2-1. Anticipated exposure levels and limits will be quantified in RWPs. RWPs will be written as required for project activities that will define hold points, required dosimetry, RCT coverage, RCAs, and radiological limiting conditions in accordance with applicable company policies and procedures. RadCon personnel will participate in the prejob briefing required by applicable company policies and procedures to ensure all personnel understand the dose rate limits and limiting conditions on the RWP. All personnel will be required to read and acknowledge the RWP requirements before being allowed to sign the RWP (or scan the RWP bar code) and obtain electronic dosimetry.

Basic protective measures used to reduce external doses include (1) minimizing time in radiation areas, (2) maximizing the distance from known sources of radiation, and (3) using shielding whenever possible.

Methods for Minimizing Time

- Plan and discuss the tasks before entering a radiation area (including having all equipment and tools prepared)
- Perform as much work as possible outside radiation areas and take advantage of lower dose rate areas (as shown on the radiological survey maps or as described in the RWP)
- Take the most direct route to the task area and work efficiently
- If problems occur in the radiation areas, hold technical discussions outside radiation areas, then return to the work area to complete the task
- If stay times are required, know your stay time and use appropriate signal and communication method to let others in the area know when the stay time is up
- Respond to electronic dosimetry alarms by notifying others in the area and the RCT, and exit the radiation area through the designated entry and exit point
- Know your current dose and your ALARA goal—DO NOT EXCEED YOUR DOSE LIMIT.

Methods for Maximizing Distance from Sources of Radiation

- Use remote operated equipment or controls to perform handling of high radiation or contaminated items (where feasible)
- Stay as far away from the source of radiation as possible (extremely important for point sources where, in general, if the distance between the source is doubled, the dose rate falls to one-fourth of the original dose rate)
- Become familiar with the radiological survey map for the area in which work will be performed as well as high and low dose-rate locations, and take advantage of low dose rate areas.

Proper Use of Shielding

- Know what shielding is required and how it is to be used for each radiation source
- Take advantage of the equipment and enclosures for shielding yourself from radiation sources
- Wear safety glasses to protect eyes from beta radiation.

4.4.1.2 Internal Radiation Dose Reduction. An internal radiation dose potential exists at the project from radionuclides in the tank and potentially in the vault area. An internal dose is a result of radioactive material being taken into the body. Radioactive material can enter the body through inhalation, ingestion, absorption through wounds, or injection from a puncture wound. Reducing the potential for radioactive material to enter the body is critical to avoid an internal dose. The following are methods to minimize internal radiation dose hazard:

- Know the potential and known contamination sources and locations, and minimize or avoid activities in those areas
- Wear protective clothing and respiratory protection as identified on the RWP, perform all respirator leak checks, and inspect all PPE before entering contaminated areas or areas with airborne radioactivity
- Use a HEPA filter exhaust system
- When inside contaminated areas, do not touch your face (adjust glasses or PPE) or other exposed skin
- When exiting contaminated areas, follow all posted instructions and remove PPE in the order prescribed (if questions arise, consult RadCon personnel)
- Perform a whole body survey in accordance with posted instructions when exiting the contaminated area, then proceed directly to the personnel contamination monitor (or equivalent)
- Report all wounds or cuts (including scratches and scrapes) before entering radiologically contaminated areas
- Wash hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

Monitoring for radiation and contamination during protect tasks will be conducted in accordance with the RWP, applicable company policies, manuals, and procedures, and as deemed appropriate by RadCon personnel.

4.4.2 Chemical and Physical Hazard Exposure Avoidance

NOTE: Identification and control of exposures to carcinogens (such as asbestos) will be conducted in accordance with applicable company policies and procedures.

VES-SFE-20 project radiological activities will generate low-level, mixed low-level, hazardous, and Toxic Substances Control Act remediation wastes. Most of the waste designated for ICDF disposal will be contaminated soil, but contaminated piping, debris, and CERCLA investigation-derived waste may also be included in the waste inventory.

The primary potential for exposure during VES-SFE-20 project activities will be from contact with the tank sediments, vault contaminants, and associated contaminants on piping and debris. An additional exposure exists from chemicals brought to the project site in support of operational activities and from waste handling and disposal operations. Project personnel will be required to have an MSDS for all chemicals used at the project site in accordance with applicable company policies and procedures.

Threshold limit values (TLVs) or other occupation exposure limits have been established for numerous chemicals and physical agents (e.g., noise, heat, or cold stress) that may be encountered. These exposure limits provide guidelines in evaluating airborne, skin, and physical agent exposures. The TLVs represent levels and conditions under which it is believed that nearly all workers may be exposed day after day without adverse health effects. The TLV-TWA is a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects. Action limits (instantaneous concentrations for short time periods) have been established (Section 3) to further reduce the likelihood of exceeding TLVs and for substances with OSHA substance-specific regulatory standards (Section 8).

Controls will be employed during project activities to eliminate or mitigate chemical and physical hazards wherever feasible. The hierarchy of controls in order are (1) engineering controls, (2) administrative controls, and (3) PPE. In addition to these controls, technical procedures and work orders, hold points, training, and monitoring hazards will be used as appropriate to reduce exposure potential. Some methods of exposure avoidance include the following:

- Wearing all required PPE, inspecting all pieces before donning, and taping all seams
- Changing PPE if it becomes damaged or shows signs of degrading
- Minimizing time in direct contact with hazardous material or waste
- Doff PPE following standard practices (i.e., rolling outer surfaces in and down) and follow doffing sequence
- Wash hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

4.5 Buddy System

The two-person or “buddy system” will be used during some VES-SFE-20 project activities. The buddy system is most often used during project activities requiring the use of protective clothing and

respiratory protection where heat stress and other hazards may impede a person's ability to self-rescue or in immediately dangerous to life or health (IDLH) situations. The buddy system requires each employee to assess and monitor his or her buddy's mental and physical well being during the course of the operation. A buddy must be able to perform the following activities:

- Provide assistance if required
- Verify the integrity of PPE
- Observe his or her buddy for signs and symptoms of heat stress, cold stress, or contaminant exposure
- Notify other personnel in the area if emergency assistance is needed.

The need to use the buddy system during VES-SFE-20 project activities will be determined by the HSO, IH, and safety engineer in conjunction with the FTL or STR and RadCon personnel.

5. PERSONAL PROTECTIVE EQUIPMENT

The project presents numerous potential industrial safety, radiological, nonradiological, and physical hazards to personnel conducting project activities. Applicable company policies and procedures will be used to evaluate all activities. Anyone entering the project-controlled areas must be protected against potential safety and exposure hazards. This section provides guidance for the selection and use of PPE to be worn for project activities and contingencies for upgrading/downgrading PPE. These PPE requirements for specific project tasks may be further defined or supplemented in applicable company policies and procedures, work packages, SWP, or RWP.

The purpose of PPE is to shield or isolate personnel from radiological, nonradiological, physical, and/or biological hazards that cannot be eliminated through engineering or other controls. It is important to realize no one PPE ensemble can protect against all hazards and under all conditions. Proper work practices and adequate training will serve to augment PPE to provide the greatest level of protection to workers as follows:

- PPE will be selected, issued, used, and maintained in accordance with applicable company policies and procedures. Selection of the proper PPE to protect facility personnel is based on the following: pipe cutting, heavy equipment operation, decontamination)
- Potential contaminant routes of entry are understood
- Physical form and chemical characteristics of chemicals or waste contaminants are discussed
- Acute and chronic effects from exposure to chemicals or waste contaminants are understood
- Local and systemic toxicity of chemicals or waste contaminants are communicated
- Potential exposure levels (surface and airborne) are discussed
- The hazard analysis (Section 2) evaluation of this HASP is read and understood.

If radiological contamination is encountered at levels requiring the use of anticontamination (anti-C) clothing, a task-specific RWP that will be developed and applicable company policies and procedures will be followed.

PPE is generally divided into two broad categories: (1) respiratory protective equipment and (2) personal protective clothing. Table 5-1 provides guidance in the selection process for respiratory and protective clothing. Project activities will be continually evaluated during the course of the project to determine the most appropriate PPE levels and any modifications required. Potential exposures and hazards associated with project tasks will be monitored (as discussed in Section 3) during the course of the project to evaluate changing conditions and to determine PPE level adequacy and modifications.

5.1 Respiratory Protection

In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective will be to prevent atmospheric contamination. This will be accomplished as far as feasible by accepted engineering control measures (e.g., enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators will be selected and used. The level and type of respiratory protection for VES-SFE-20 project activities is task-specific and relates directly to the airborne hazard for each given Phase I and II task or activity.

Table 5-1. Respiratory and protective clothing selection guidance.

Hazard	Level of Protection
<u>Respiratory PPE Selection^a</u>	
Not IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate and/or aerosol chemicals/radionuclides.	Level C—full-facepiece, as determined by IH/RadCon Level B—full-facepiece supplied air respirator with an air-purifying escape cartridge or airhood (bubblehood) HEPA/chemical combination cartridge for concentrations up to the protection factor of an air-purifying full-facepiece respirator and within the assigned DAC ^b value
IDLH or oxygen-deficient atmospheric conditions, gaseous, vapor, particulate, and/or aerosol chemicals/radionuclides.	Level B—full-facepiece, supplied air respirator with an escape-only SCBA ^c or Level A—SCBA
<u>Protective Clothing Selection</u>	
Low atmospheric contaminant levels that are present under stable conditions. No anticipated immersion, splashes, or potential for unexpected contact with radiological or nonradiological contaminants.	Level D
Moderate atmospheric contaminants under relatively stable conditions; liquid splashes or other direct contact that do not have corrosive characteristics or can be absorbed by exposed skin. Low radionuclide contamination and airborne radioactivity levels. ^d	Level C
Moderate to high atmospheric contaminants under unstable conditions; potential for contact with wet, contaminated surfaces/material that can saturate or permeate Level C protective clothing. Moderate radionuclide contamination and airborne radioactivity levels. ^d	Level B (As a contingency only)
High and unknown atmospheric contaminants; potential for contact with substances that pose a high hazard potential to the skin; high potential for splash, immersion, or exposure to unexpected vapors, gases, aerosols, or dusts that may present an IDLH situation/readily absorbed through the skin. High radionuclide contamination and airborne radioactivity levels. ^d	Level A (Will not be worn)
<p>a. A HEPA or multichemical and HEPA combination cartridge may be selected by IH and RadCon personnel based on specific hazards.</p> <p>b. DAC based on specific radionuclides.</p> <p>c. Contamination levels and airborne radioactivity as defined by 10 CFR 835.603(d).</p> <p>d. Level A PPE is not anticipated to be required for personnel conducting project operations.</p> <p>DAC = derived air concentration SCBA = self-contained breathing apparatus</p>	

All personnel required to wear respirators shall complete training and be fit-tested before being assigned a respirator. Requirements for respirator use, emergency use, storage, cleaning, and maintenance, as stated in the applicable company policies and procedures shall be followed. Assigned protection factors for respiratory devices are listed applicable company policies and procedures.

5.2 Personal Protective Equipment Levels

The following sections provide general guidance on typical HAZWOPER levels of PPE. Project activities will be evaluated to determine the most appropriate PPE which may or may not incorporate traditional HAZWOPER levels. When required to be worn, PPE requirements will be specified on applicable JSAs. Table 5-2 lists the anticipated PPE levels for project activities. These levels will be changed or modified by the project HSO as appropriate based on site-specific conditions in consultation with the project IH and RadCon personnel. Such modifications are routinely employed to maximize efficiency and to meet operational-specific needs without compromising personnel safety and health. Table 5-3 lists PPE items typically included for the two anticipated levels (Level D and C) of PPE to be worn at the project site and contingency for (Level B).

5.2.1 Level D Personal Protective Equipment

Level D PPE will only be selected for protective clothing and not for project activities with respiratory or skin absorption hazards requiring whole-body protection. Level D PPE provides no protection against airborne chemical hazards, but rather is used for protection against surface contamination and physical hazards. Level D PPE will only be allowed in areas that have been characterized as having limited contamination hazards.

5.2.2 Level C Personal Protective Equipment

Level C PPE will be worn when the task site chemical or radiological) contaminants have been well-characterized indicating that personnel are protected from airborne exposures by wearing an air-purifying respirator with the appropriate cartridges, no oxygen-deficient environments exist (less than 19.5% at sea level), and that there are no conditions that pose IDLH.

5.2.3 Level B Personal Protective Equipment

Level B PPE is listed as a contingency only and will be worn when personnel cannot be adequately protected with air purifying respirator because there are high levels of contaminants present, the appropriate respirator cartridges or combination is not available, a significant hazard exists for skin exposure, or IDLH or oxygen-deficient conditions exist. If IDLH conditions do not exist, then an escape air-purifying cartridge may be substituted for the escape bottle.

NOTE: Personnel must inspect all PPE before donning and entry into any work area. Items found to be defective or that become unserviceable during use, will be doffed and disposed of in accordance with posted procedures and placed into the appropriate waste stream. The PPE inspection guidance is provided in Table 5-3.

5.2.4 Level A Personal Protective Equipment

Level A PPE is not anticipated for VES-SFE-20 project activities.

Table 5-2. Project activities and associated personal protective equipment levels.

Task	Initial Level of PPE	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	PPE Modifications and Comments
Mobilization, demobilization, and site reclamation	D	D+/C	N/A	Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH based on airborne contaminant. Gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable. Leather gloves for all material handling tasks. Hearing protection as required by IH.
Decontamination	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on type of decontamination and contaminants. Downgrade only for staging and removal of material to be decontaminated contingent upon no surface contamination or use of confining barrier material.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Gloves and other protective clothing materials defined by IH and RWP as applicable. Hearing protection as required by IH.
PHASE I TASKS					
Rerouting of existing utilities	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on type of decontamination and contaminants. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Gloves and other protective clothing materials defined by IH and RWP as applicable. Additional eye protection and hearing protection as required by IH.
Excavation, sloping, and soil disposal	D	D+/C	N/A	Upgrade based on contaminants encountered in soils. Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable.
Removal of tank and contents	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on nature of the tasks and contaminants encountered.	Level C respiratory protection defined by IH and RWP based on airborne contaminants and tasks. All asbestos work in accordance with 29 CFR 1910.1001 or 29 CFR 1926.1101 (as applicable).

Table 5-2 (continued).

Task	Initial Level of PPE	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	PPE Modifications and Comments
Disposal of tank and contents	D/D+	D+/C	D	Downgrade only for preliminary staging of materials and tools and following removal and isolation of contaminants in appropriate waste containers. Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only when handling containerized waste with no surface contamination or associated nonradiological airborne or surface hazards.	Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable. Level C respiratory protection defined by IH and RWP based on airborne contaminants and tasks. All asbestos work in accordance with 29 CFR 1910.1001 or 29 CFR 1926.1101 (as applicable). Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable.
Vault closure and site grading	D	D+/C	N/A	Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH based on airborne contaminant. Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable. Leather gloves for all material handling tasks.
PHASE II TASKS					
Cutting and capping of existing lines	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material handling tasks.
Excavation and shoring	D	D+/C	N/A	Upgrade based on contaminants encountered in soils. Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Fall protection as required.

Table 5-2 (continued).

Task	Initial Level of PPE	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	PPE Modifications and Comments
Building removal	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material handling tasks. Fall protection as required.
Underground structure removal	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material handling tasks. Fall protection as required.
Contaminated soil removal	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material handling tasks. Fall protection as required.
Disposal of process equipment, structures, and contaminated soil	D	D+	N/A	Upgrade only if contaminants encountered in surface of waste containers. If encountered decontamination to be conducted.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material handling tasks. Fall protection as required. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable.

Table 5-3. Levels and options of personal protective equipment.

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
D	<p>Coveralls or standard work clothes (coverall material type based on industrial hygiene determination)</p> <p>Hard hat (unless working indoors with no overhead or falling debris hazards) meeting ANSI Z89.1 requirements</p> <p>Eye protection (safety glasses meeting ANSI Z87.1 requirements as a minimum)</p> <p>Hand protection (material based on type of work and hazardous materials being handled)</p> <p>Safety footwear (steel or protective toe and shank) meeting ANSI Z41 requirements or sturdy leather above the ankle for construction tasks</p> <p>Highly visible vests for ground personnel exposed to heavy equipment traffic</p>	<p>Chemical or radiological protective clothing (Tyvek or Saranex) as determined by IH or RCT</p> <p>Chemically resistant hand and foot protection (e.g., inner and outer gloves and boot liners)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, cryogenic gloves, face shields, welding goggles, and aprons).</p>
C	<p>Level D ensemble with the following respiratory and whole-body protection upgrades^b:</p> <ul style="list-style-type: none"> • Full-facepiece air purifying respirator equipped with a NIOSH-approved HEPA filter or chemical combination cartridge (industrial hygienist to specify cartridge type) <p>OR</p> <ul style="list-style-type: none"> • An air hood operating at a minimum pressure of 6 cfm or a full-facepiece supplied air respirator with a 10-minute escape bottle, a SCBA or an escape air-purifying combination HEPA or chemical cartridge (supplied air respirator hose length no more than manufacturer's specification and under no circumstances greater than 91 m [300 ft]) • Standard Tyvek (or equivalent) coverall <p>OR</p> <ul style="list-style-type: none"> • Chemical-resistant coveralls (e.g., Tyvek QC, Tychem 7500, or Saranex-23-P) (IH to specify material) 	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material)</p> <p>Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP)</p> <p>Outer chemical-resistant gloves (as determined by the IH)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons)</p> <p>(Safety glasses not required if wearing a full-face respirator)</p>

Table 5-3. (continued).

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
B	<p>Contingency only for VES-SFE-20 project.</p> <p>Level C ensemble with the following respiratory and whole body protection upgrades^{b,c}:</p> <ul style="list-style-type: none"> • Chemical-resistant coveralls or encapsulating suit (Tyvek QC, Tychem 7500, Saranex 23-C, or equivalent) • Any other chemical or radiological PPE prescribed in site-specific RWP or safe work permit • Chemical-resistant butyl or one-time-use natural latex outer boots (as determined by the IH and RWP) • Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP) • Outer chemical-resistant Viton or polyvinyl alcohol gloves (as determined by the IH) <p>NOTE: All seams must be taped and secured to prevent skin contact from hazardous substances in a soil, liquid, mist, and aerosolized form.</p>	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons)</p> <p>(Safety glasses not required if wearing a full-face respirator)</p>
A	<ul style="list-style-type: none"> • Not anticipated for VES-SFE-20 project activities 	Not anticipated for VES-SFE-20 project activities

a. The PPE ensemble may be modified by the IH and/or RCT to provide protection from skin or other physical hazards.
b. Upgrades are determined by the IH in conjunction with other environment, safety, and health professionals.
c. Level B and A work will require approval from the program safety, health, and quality assurance manager and coordination with the INEEL fire department.

5.3 Personal Protective Clothing Upgrading and Downgrading

The HSO, in consultation with the assigned IH and RadCon personnel, will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading of PPE based on changing operational conditions (e.g., equipment, waste types, location of tasks) is a normal occurrence. If changing conditions are encountered, work control documents (e.g., work order, RWP, JSA) may need to be updated to reflect these changes or augmented by a SWP. Additional reasons for upgrading or downgrading are listed in the following subsections.

5.3.1 Upgrading Criteria for Personal Protective Equipment

The level of PPE required will be upgraded for the following reasons and work will halt until PPE upgrading has been completed:

- Identification of new, unstable, or unpredictable site hazards
- Temporary loss or failure of any engineering controls

- Contaminants that present difficulty in monitoring or detecting
- Known or suspected presence of skin absorption hazards
- Identified source or potential source of respiratory hazard(s) not anticipated
- Change in the task procedure that may result in an increased contact with contaminants or meeting any of the criteria listed above.

5.3.2 Downgrading Criteria

The level of PPE will be downgraded under the following conditions:

- Elimination of hazard or completion of task(s) requiring specific PPE
- Implementation of new engineering or administrative controls that eliminate or significantly mitigate hazard
- Sampling information or monitoring data that show the contaminant levels to be stable and lower than established action limits
- Elimination of potential skin absorption or contact hazards.

5.4 Inspection of Personal Protective Equipment

All PPE ensemble components must be inspected before use and when in use during project activities in accordance with applicable company policies and procedures. Once PPE is donned, self-inspection will serve as the principal form of inspection. If PPE should become damaged or degradation or permeation is suspected, the individual wearing the PPE will inform others of the problem and proceed directly to the work zone exit point to doff and replace the unserviceable PPE. In addition, all PPE that becomes grossly contaminated or presents a potential source for the spread of such contamination will be required to be decontaminated or replaced.

Table 5-4 provides an inspection checklist for common PPE items. Not all PPE ensemble items may be required for project tasks, however, this information is provided as a contingency. Where specialized protective clothing or respiratory protection is used or required, the manufacturer's inspection requirements in conjunction with regulatory or industry inspection practices will be followed. Consult the assigned IH, safety professional, and RadCon about specific PPE inspection criteria.

Table 5-4. Inspection checklist for personal protection equipment.

Personal Protection Equipment Item	Inspection
Respirators (full-facepiece air-purifying and supplied air respirators with escape-only SCBA bottles or escape cartridges)	<p>Before use:</p> <ul style="list-style-type: none"> • Verify that respirator is within 3 years of shelf life. • Ensure airline matches the airline respirator to be used (black hose). • Inspect airline hose connections (sections of hose) to ensure all are threaded or permanent metal-to-metal connections (no quick disconnect pieces). • Check condition of the facepiece, head straps, valves, connecting lines, fittings, and all connections for tightness. • Check cartridge to ensure proper type or combination are being used for atmospheric hazards to be encountered, and inspect threads and O-rings for pliability, deterioration, and distortion. • Check for proper setting and operation of regulators and valves, check all hose connections back to the breathing-air compressor, check the pressure to the airline station and on individual airline connections to ensure pressure is within required range (in accordance with the manufacturer's specifications). <p>Before entry into Level B area:</p> <ul style="list-style-type: none"> • Ensure air compressor is providing a minimum of 110 psi when all personnel have airlines hooked up to the compressor manifold.
Air hoods	<p>Before use:</p> <ul style="list-style-type: none"> • Ensure airline matches the air hood to be used (red hose). • Visually inspect all seams and surfaces for tears and cracks. • Pressurize air hood to check for pinholes or defective seams (no air should leak out when choking clear hood-piece). <p>Before entry into contaminated area:</p> <ul style="list-style-type: none"> • Inspect all airline connections for tight fit (pull connections three times). • Ensure air compressor is providing a minimum of 110 psi when all personnel have airlines hooked up to the compressor manifold.
Level D, C, and B clothing	<p>Before use:</p> <ul style="list-style-type: none"> • Visually inspect for imperfect seams, nonuniform coatings, and tears. • Hold PPE up to the light and inspect for pinholes, deterioration, stiffness, and cracks. <p>While wearing in the work zone:</p> <ul style="list-style-type: none"> • Inspect for evidence of chemical attack such as discoloration, swelling, softening, and material degradation. • Inspect for tears, punctures, and zipper or seam damage. • Check all taped areas to ensure they are still intact.
Gloves	<p>Before use:</p> <ul style="list-style-type: none"> • Pressurize rubber gloves to check for pinholes: blow in the glove, then roll until air is trapped and inspect. No air should escape. <p>Leather gloves:</p> <ul style="list-style-type: none"> • Inspect seams and glove surface for tears and splitting and verify no permeation has taken place.

6. PERSONNEL TRAINING

All INEEL personnel will receive training, as specified in the applicable section of the 29 CFR 1910.120, HAZWOPER standard, INTEC, DOE, federal, State, and INEEL companywide manuals as applicable. Training will be developed, conducted, and maintained in accordance with applicable company manuals and applicable INTEC supplemental training procedures (where required). Applicable company manuals describe the companywide processes that ensure the INEEL work force is properly trained to work effectively and safely and ensures that all personnel in the company understand their roles, management's role, and the role of the Training Directorate in training INEEL employees.

Assigned project personnel will receive training, as specified in 29 CFR 1910.120 or 29 CFR 1926.65 and INEEL companywide manuals, as applicable. Table 6-1 summarizes the project-specific training requirements.

Modifications (e.g., additions to or elimination of) to training requirements listed in Table 6-1 may be necessary based on changing field conditions. Any changes to the requirements listed in Table 6-1 must be approved by the HSO, with concurrence from the FTL or STR, project manager, RCT, and IH, as applicable. These changes should be based on site-specific conditions and should be considered a minor change to the HASP, as defined by instructions from applicable company forms because they are administrative in nature and do not change the intent of the document.

6.1 General Training

All project personnel are responsible for meeting training requirements including applicable refresher training. Evidence of training will be maintained at the project site, field administrative location, or electronically (e.g., Training Records and Information Network [TRAIN] [INEEL 2001]). Nonfield team personnel and visitors must be able to provide evidence of meeting required training for the area of the site they wish to access before being allowed into a project area. **As a minimum**, all personnel who access project support locations must have received a site-specific orientation briefing, are required to wear PPE, and must provide objective evidence of having completed INEEL computer-based PPE training (00TRN288, "Personal Protective Equipment") or equivalent, in accordance with 29 CFR 1910.132, "General Requirements."

6.2 Project-Specific Training

Before beginning work at the project site, field team members will receive project-specific HASP training that will be conducted by the HSO (or designee). This training will consist of a complete review of (1) a controlled copy of the project HASP, attachments, and document action requests, (2) applicable JSAs and SWPs (if required), (3) work orders, and (4) other applicable work control and work authorization documents, with time for discussion and questions. Project-specific training can be conducted in conjunction with, or separately from, the required formal prejob briefing.

At the time of project-specific HASP training, personnel training records will be checked and verified to be current and complete for all the training requirements shown in Table 6-1. After the HSO (or designee) has completed the site-specific training, personnel will sign applicable company forms or equivalent, indicating that they have received this training, understand the project tasks, associated hazards and mitigations, and agree to follow all HASP and other applicable work control and safety requirements. Training forms are available on the INEEL Intranet under "Forms."

Table 6-1. Minimum required training for access to project areas.

Personnel and Operational Areas to be Accessed (unless specific positions are listed, minimum access requirements apply to all other project personnel and visitors)	FTL ^a , STR ^a , Assigned Project Environment, Safety, and Health, and RadCon Personnel	Project Support Zone/Areas ^b	General Controlled Access Areas (e.g., contamination reduction zone, exclusion zone)	Access to Radiological Contamination or Potentially Contaminated Areas and Operations with Potential Significant Safety or Health Hazards
Required Training				
40-hour HAZWOPER ^c - operations	Yes		d	Yes
24-hour HAZWOPER ^c - operations			d	
Project operations HASP training ^e	Yes		Yes	Yes
Project-site orientation briefing ^f		Yes		
Radiological Worker I or II ^g	RW II	Escort or RW I	Escort or RW II	RW II
Respiratory protection	Yes		h	h

NOTE: Shaded fields indicate specific training is not required or applicable.

a. The FTL and STR will be trained to the HAZWOPER supervisor level.

b. Project operational support areas located within the INTEC operations area may require additional training requirements such as INEEL access (Blue Card) or INTEC access. Contact the project FTL for additional training requirements.

c. Includes 8-hour HAZWOPER refresher training as applicable, and supervised field experience as follows:

40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience.

d. 40-hour or 24-hour HAZWOPER training requirement will be determined by the assigned IH or safety professional based on the nature of the operational tasks and potential for exposure to contaminants or significant safety hazards.

e. Includes project-specific hazards communications (29 CFR 1910.1200), site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e), "Training."

f. Orientation includes briefing of site hazards, designated work areas, emergency response actions, and PPE requirements. Personnel receiving project-site orientation briefing only are limited to the areas outside designated work areas and must be escorted by a project supervisor or designee who is fully trained on the requirements of the HASP.

g. Training requirements and allowances for escort into radiologically controlled areas are provided in applicable company policies and procedures.

h. If action levels are exceeded or as required by the RWP.

CFR = *Code of Federal Regulations*

RW = radiological worker

A trained HAZWOPER 8-hour supervisor (FTL or other person who has been trained by the HAZWOPER supervisor) will monitor the performance of each newly 24-hour or 40-hour trained worker to meet the 1 or 3 days of supervised field experience, respectively, in accordance with 29 CFR 1910.120(e). Following the supervised field experience period, the supervisor will complete applicable company forms to document the supervised field experience. Table 6-2 outlines personnel training requirements at CERCLA sites.

Table 6-2. Required project-specific training.

Required Training	Field Team Leader, Health and Safety Officer, and Samplers	Other Field Team Members	Access into the Designated or Controlled Work Area, Construction Area or Contamination Reduction Zone	Access to Project Areas Outside Designated or Controlled Work Area, Construction Area or Support Zone
40-hour hazardous waste operations (HAZWOPER) ^a - operations	Yes	Yes		
24-hour HAZWOPER ^b - operations			Yes	
HAZWOPER supervisor	Yes			
Project-specific Health and Safety Plan training ^c	Yes	Yes	Yes	
Project-site orientation briefing ^d				Yes
Fire extinguisher training (or equivalent)	e	e		
Cardiopulmonary resuscitation, medic first-aid	e	e		
Use of Personal Protective Equipment (00TRN288)	Yes	Yes	Yes	
Hearing conservation	g	g	g	
Hantavirus (SMTT0008)	Yes	Yes		
Heat Stress Training (00TRN606)	Yes	Yes		
Working in Hazardous Temperatures - Cold Stress (SMTT0010)	Yes	Yes		
Job safety analysis (JSA) training	Yes	Yes	Yes	
Respirator training (contingency only)	f	f	f	
Pre-job Briefings and Post-job Reviews (00TRN732)	h			
Pre-job Briefing Performance Evaluation (00TRN754)	h			
DOE Radiological Worker II/Radiological Worker I	h	h	h	

NOTE: Shaded fields indicate specific training is not required or applicable.

a. Includes 8-hour hazardous waste operations (HAZWOPER) refresher training as applicable, and supervised field experience as follows: 40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience).

b. 40-hour or 24-hour HAZWOPER training requirement will be determined by the HSO based on the nature of the project tasks and potential for exposure to contaminants or safety hazards.

c. Includes project-specific hazards communications (29 CFR 1910.120), site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e).

d. Orientation includes briefing of site hazards, designated work areas, emergency response actions, and PPE requirements. Personnel receiving project-site orientation briefing only are limited to the areas outside designated work areas and must be escorted by a project supervisor or designee who is fully trained on the requirements of the Health and Safety Plan.

e. At least one trained person onsite when field team is working and the health and safety officer will determine appropriate number of personnel requiring training.

f. Only required if entering area requiring respiratory protection (e.g., action levels exceeded or the industrial hygienist sampling shows respirators required).

g. Only if entering areas where initial exposure determination indicates exposure above the action limit is possible.

h. As required, based on project duties and/or site zone access requirements.

NOTE 1: Supervised field experience is only required if personnel have not previously completed this training at another CERCLA (42 USC § 9601) site (documented), or they are upgrading from 24- to 40-hour HAZWOPER training. A copy of the training record must be kept at the project site as evidence of training or be available electronically.

NOTE 2: Completed training project forms should be submitted to the program training coordinator for inclusion in the TRAIN system within 5 working days of completion.

6.3 Prejob and Postjob Briefings and Safety Meetings

All VES-SFE-20 project activities performed in accordance with companywide requirement documents will require a prejob briefing conducted by a supervisor. During this briefing, tasks associated with project activities will be outlined, hazards identified, hazard controls and mitigation reviewed, PPE requirements discussed, waste minimization opportunities communicated, and employees' questions answered. Following the completion of operational activities, a postjob briefing will be conducted with particular emphasis of capturing lessons learned and process improvement for future operations.

Other safety meetings on various subjects will be conducted periodically for operations personnel to reinforce specific safety topics. A FTL or STR, assigned safety and health operations personnel or worker may conduct safety meeting. Attendance at the safety meetings will be documented on an applicable form and submitted to training personnel for entry into TRAIN.

7. SITE CONTROL AND SECURITY

Site control and security will be maintained at the project site during all activities to prevent unauthorized personnel from entering the work area. Entry into and exit out of these areas will be controlled through the appropriate use of barriers, signs, and other measures in accordance with applicable company policies and procedures.

The HSO and safety professional will be consulted regarding equipment layout at the project site (in conjunction with the subcontractor representative for subcontractor-owned equipment) to minimize personnel hazards from equipment. The focus for site layout should be on equipment with stored energy (electrical, pressurized systems, elevated materials/equipment, chemical), moving and rotating parts and other equipment with the potential to result in personnel injuries from being struck-by, caught-between, or entangled in such equipment. The layout at the project site should reflect the nature of the chemical and radiological hazards present and should be mitigated through the use of engineering controls (barriers, guards, isolation), administrative controls (roped off restricted areas or controlled entry access).

Good housekeeping will be maintained at all time during the course of the project to include maintaining working and walking surfaces to minimize tripping hazards, stacking or storing in a centralized location materials and equipment when not in use, and regular cleanup of debris and trash that may accumulate at the project site.

Based on the nature of the project tasks to be completed during the Phase I and II activities, the site controls will change during the course of the project to reflect the and changing hazards associated with the type of work being conducted within the controlled work areas (such as, physical, chemical or radiological). A graded approach with types of site control designations will be used based on these hazards, type of equipment in the controlled areas, duration of project tasks, and HAZWOPER regulatory or radiological requirements. The types of site controlled areas anticipated during the course of Phase I and II activities include but are not limited to:

- **Low Hazard** (nonintrusive or minimal intrusive activities (such as staking area during surveying tasks) where there is no potential for encountering radiological or chemical hazards)—see Figure 7-1 for example configuration.
 - Support area or zone (this zone does not have to be formally delineated but must be clearly separate from the construction area or controlled work area [CWA])
 - Construction area or CWA (limits access to trained personnel only).
- **Moderate to High Hazard** (known or likely to encounter site radiological and chemical hazards or other hazardous activities or operations)—see Figure 7-2 for example configuration.
 - Support area or zone (this does not have to be formally delineated but must be clearly separate from the other controlled areas)
 - Contamination reduction zone (CRZ) with a contamination reduction corridor (CRC) /decontamination area (CRC and decontamination area do not have to be formally delineated but must be communicated to personnel entering the CRZ).

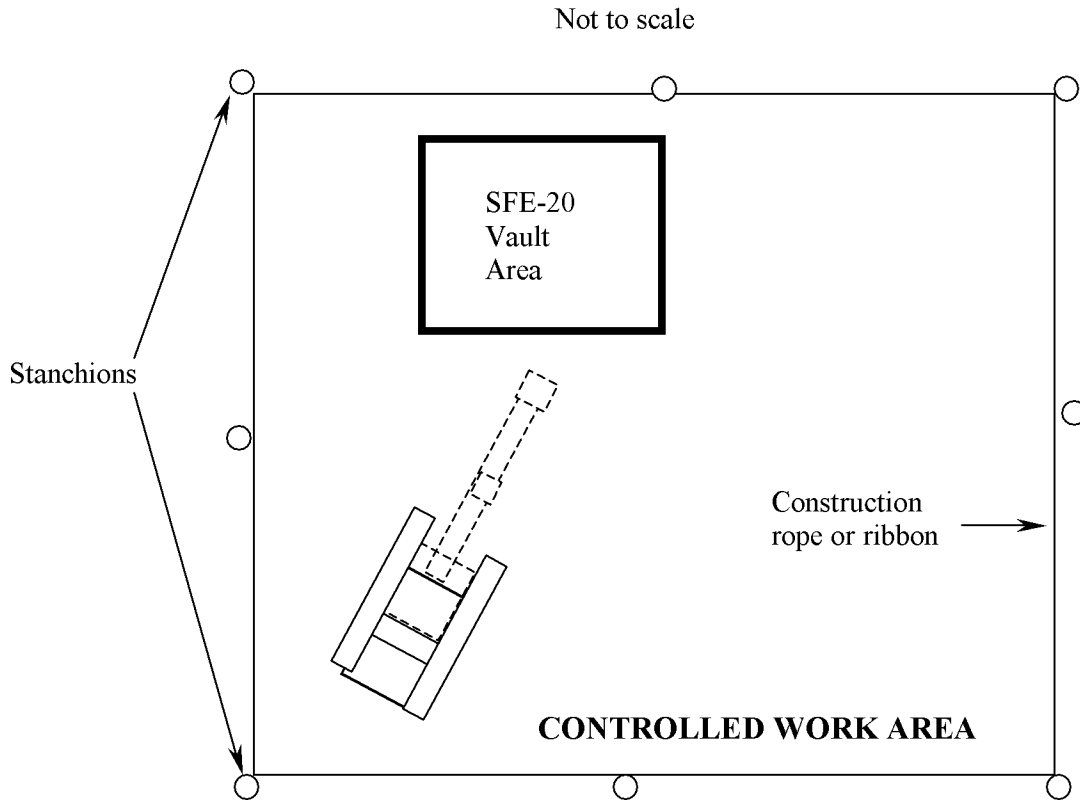


Figure 7-1. Example of low hazard or construction controlled work area.

- Exclusion zone (EZ) (large enough to encompass hazardous activities, equipment, and operations).
- Additional controlled areas (such as, radiological control areas and asbestos abatement area) within the EZ or CWA may be established based on the hazards.

The primary differences between the work areas will be the size of the area, method of delineation, and postings as determined by the activity being conducted and associated hazards. The determination of what type of work area will be established will be made by the HSO in conjunction with the FTL or STR and RadCon personnel (where radiological concerns exist).

Both radiological and nonradiological hazards (including industrial safety hazards) will be evaluated when establishing the initial work zone size, configuration, and location. Common barriers may be used to delineate both radiological and nonradiological work-zone postings, depending on the nature and extent of contamination. If common barriers are used, they will be delineated and posted in accordance with all applicable requirements (29 CFR 1910.120 and 10 CFR 835), using appropriate colored rope and postings.

INTEC is fenced and controlled to prevent unauthorized entry into operations areas. Entry into and exit out of the construction area or CWA will be controlled through the appropriate use of barriers, signs, and other measures in accordance with applicable company policies and procedures. RadCon personnel in accordance with the applicable company policies and procedures will establish radiological control area.

Not to scale

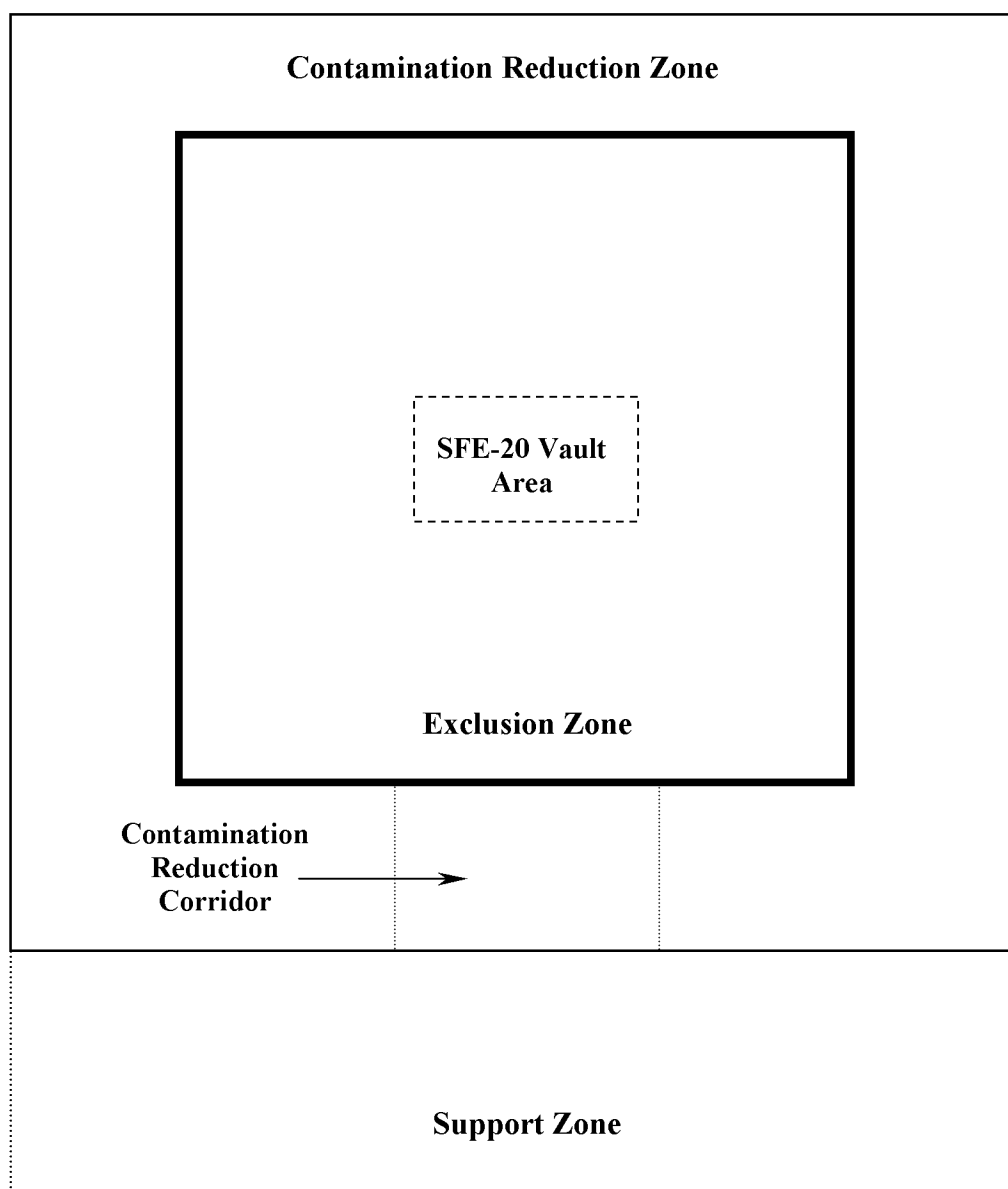


Figure 7-2. Example of moderate to high hazard work zones.

Personnel not directly involved with project activities will be excluded from entering these work areas. Visitors may be admitted into work areas provided they are (1) on official business, (2) received a site-specific orientation or HASP training, (3) have met all the site-specific training requirements for the area they request to access as listed on Table 6-1, and (4) wear appropriate PPE.

NOTE: Visitors may not be allowed into VES-SFE-20 project controlled work areas during high hazard tasks to minimize risks to workers and visitors. The decision to allow a visitor access into a controlled work area will be made by the FTL or STR in consultation with the HSO and RadCon personnel.

7.1 Support Area or Zone

The support area or zone will be considered a “clean” area. The location of the support zone should be in a prevailing upwind direction from the exclusion zone (where possible) and readily accessible from the nearest road. The support zone is a designated area or building outside the CRZ and does not have to be delineated. Support trailers, vehicle parking, additional emergency equipment, extra PPE, and stored monitoring and sampling equipment may be located in the support zone. Visitors who do not have appropriate training to enter other project areas will be restricted to this zone.

Subcontractors equipment laydown and storage area for the project will generally be located in the support zone if another designated area outside INTEC has not been established.

7.2 Construction Area or Controlled Work Area

The construction area or CWA will be large enough to encompass the equipment and nature of the project tasks being conducted to prevent personnel not assigned to the project and visitors from being exposed to potential safety and health hazards associated with the project construction or other hazardous equipment operations tasks. The boundary of the construction area or CWA will typically be marked with a combination of stanchions or posts and delineated with rope or ribbon and include warning signs (e.g., construction area) or other demarcation. Only the minimum number of personnel required to safely perform the project tasks will be allowed into this area. The area will be controlled at all times. Also, entry and exit points will be established to regulate the flow personnel and equipment. All personnel who enter the construction area or CWA will wear the appropriate level of PPE for the hazards present (see Section 5).

Factors that will be considered when establishing the construction area or CWA boundary include (1) air monitoring data, (2) equipment in use, and (3) the physical area necessary to conduct site operations. Based on the factors listed above, the boundary may be expanded or contracted as new information becomes available. The HSO, in conjunction with the safety professional and IH, will establish the boundary. All CWAs will be delineated and posted with the appropriate signage based on the hazard being controlled and in accordance with applicable company policies and procedures.

NOTE: The safety professional and IH will assist the HSO in establishing the access requirements for the truck or heavy equipment traffic routes, designated work areas, and for the project-based equipment in use.

7.3 Contamination Reduction Zone and Corridor

The CRZ and CRC are transition areas surrounding the exclusion zone and are located between the exclusion zone and support zone (see Figure 7-2). The CRC may not be formally delineated, but will be designated by the travel path from the established CRZ-controlled entry and exit point and the exclusion zone entry and exit point. The CRZ and CRC will serve to buffer the support zone from potentially contaminated exclusion zone areas. The CRZ and CRC may serve as staging areas for equipment and temporary rest areas for personnel.

7.4 Exclusion Zone

The EZ is the area within the project site where exposure to the physical, chemical and radiological hazards is anticipated and access to this area controlled to minimize personnel exposure to these hazards. The EZ will be large enough to encompass the primary task area and to allow equipment and personnel to move about freely and conduct necessary project tasks. Only the minimum number of personnel required

to safely perform project tasks will be allowed into the exclusion zone. The EZ will be formally delineated and configured in such a manner to restrict personnel without proper training and PPE from entering (that is, established entry and exit points). The EZ shape and size will be based on the tasks being conducted, existing structures and facilities, and potential for impact to adjacent areas from project tasks or contaminants.

The EZ is a controlled access zone at all times. An entry and exit point will be established at the periphery of the exclusion zone and CRC to regulate the flow of personnel and equipment. The exclusion zone boundary will be delineated with rope or printed hazard ribbon and posted with signs in accordance with applicable company policies and procedures.

Factors that will be considered when establishing the EZ boundary include (1) tasks being conducted, (2) air monitoring data, (3) radiological contamination data, (4) radiation fields, (5) equipment in use, (6) the physical area necessary to conduct site operations, and (7) the potential for contaminants to be blown from the area. The boundary may be expanded or contracted as these factors change or additional monitoring information becomes available. All personnel who enter the exclusion zone will wear the appropriate level of PPE for the hazards present and have required training as listed in Sections 5 and 6 of this HASP, respectively.

7.5 Radiologically Contaminated Material Release

Project equipment or materials taken into or removed from radiologically controlled areas will not be released until required radiological surveys have been completed (e.g., hand-held instruments and swipes) in accordance with applicable company policies and procedures as stated in the RWP, and as directed by RadCon personnel.

7.6 Site Security

The INTEC is secured and controlled with the existing fence and through appropriate posting to prevent entry into INTEC operational areas. INEEL security forces will provide general INTEC security and no additional site security beyond posting and delineating the project-controlled area (as described above) is required.

NOTE: Signs are routinely lost because of high winds and will be replaced as soon as possible the next working day following discovery.

7.7 Wash Facilities and Designated Eating Areas

Many project activities will involve close, if not direct, contact with contaminated surfaces or hazardous materials. Ingestion of hazardous substances is likely when workers do not practice good personal hygiene habits during and following activities in project contaminated areas. It is important to wash hands, face, and other exposed skin areas thoroughly after completion of work and before smoking, eating, drinking, or chewing gum or tobacco.

NOTE: No smoking, chewing, eating, applying lip balm, or drinking is allowed within CERCLA-regulated areas and radiologically controlled areas.

The designated eating areas for site personnel will be established by the project HSO and will include INTEC designated eating areas.

7.8 Smoking Area

Smoking will only be permitted in designated smoking areas. Personnel will comply with all INEEL smoking policies, including disposal of smoking materials in the proper receptacles. All applicable requirements related to smoking at the INEEL will be followed.

8. OCCUPATIONAL MEDICAL SURVEILLANCE

VES-SFE-20 project personnel shall participate in the INEEL OMP, defined in applicable company policies and procedures, to implement the requirements of DOE Order 440.1A, “Worker Protection Management for DOE Federal and Contractor Employees”; DOE Guide 440.1-4, “Contractor Occupational Medical Program”; and 29 CFR 1910.120(f). The following medical surveillance examinations will be provided:

- Prior to assignment
- At least once every 12 months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is acceptable
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last 6 months
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary
- Personnel who are, or may be, exposed to hazardous substances at or above the OSHA permissible exposure limit (PEL), or published exposure limits, without regard to respirator use for 30 or more days per year
- All employees who are injured, become ill, or develop signs or symptoms because of possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- All employees who wear a respirator for 30 days or more a year or as required by “Respiratory Protection” (29 CFR 1910.134)
- As required by OSHA substance-specific standards when medical surveillance action levels are exceeded.

Personnel who wear a respirator in performance of their job, or who are required to take respirator training to perform their duties under this plan, must participate in the medical evaluation program for respirator use at least annually, as required by applicable company policies and procedures.

If the OMP does not have sufficient information to complete a medical evaluation before respirator training, the employee’s supervisor will be notified. The employee will not be permitted to fit test until the needed information is provided and any additional examination or testing is completed.

A single copy of the project HASP, JSAs, confined space entry requirements (as applicable), and other exposure-related information will be made available, upon request, to the INEEL OMP physician (and subcontractor physicians) conducting medical surveillance for employees participating in VES-SFE-20 project activities. Exposure monitoring results and hazard information furnished to the OMP physician will be supplemented or updated annually (as stated in Section 12) as long as the employee is required to maintain a hazardous waste and material employee medical clearance. The OMP physician will then evaluate the physical ability of an employee to perform the work assigned.

The OMP physician shall evaluate the physical ability of project personnel to perform the work assigned, as identified in this HASP, based on job descriptions, and individual training plans. A

documented medical clearance (e.g., a physician's written opinion) will be provided to the employee and supervisor stating whether the employee has any detected medical condition that would place him or her at increased risk of health impairment from work hazardous waste operations, emergency response operations, respirator use areas, and confined space areas, as applicable. The OMP responsibilities, with regard to personnel assigned to the project, include, but are not limited to the following:

- Providing current comprehensive medical examinations (as determined by the examining physician) at an INEEL medical facility for full-time personnel
- Obtaining records/reports from an employee's private physicians, as required by the OMP director
- Performing a medical evaluation on return-to-work cases following an absence in excess of 1 work-week (40 consecutive work hours) resulting from illness or injury
- Conducting a medical evaluation in the event that management questions the ability of an employee to work or if an employee questions his/her own ability to work.

Personnel are responsible for communicating any work or medical restrictions to their supervisor so that modified work assignments can be made if necessary. During the prejob briefing, the supervisor conducting the briefing should ask workers if they have any work restrictions. However, it is the employee's responsibility to inform the supervisor of any work or medical restrictions.

NOTE: All managers, supervisors and foreman have access to employees' current medical restrictions, certifications, and surveillances through the OMP database. This allows management to review medical restrictions, surveillances, and certifications before assigning work tasks to employees

8.1 Subcontractor Workers

If subcontractors who perform project activities may be exposed to hazardous substances or health hazards at or above the established permissible exposure limits, without regard to the use of respirators, for 30 days or more a year, they shall participate in a subcontractor medical surveillance program that satisfies the requirements of 29 CFR 1910.120(f). The physician's written opinion will serve as documentation that subcontractor personnel are fit for duty.

Medical data from the subcontractor employee's private physician, collected pursuant to hazardous material worker qualification, shall be made available to the INEEL OMP physicians, upon request. A subcontractor employee's past radiation exposure history may be requested and, if so, will be submitted to the BBWI radiation dosimetry and records section, in accordance with applicable company policies, manuals, and procedures.

8.2 Injuries at the Project Site

It is the policy of the INEEL that an INEEL OMP physician examine all injured personnel for the following reasons:

- An employee is injured on the job
- An employee is experiencing signs and symptoms consistent with exposure to a hazardous material
- An employee is believed to have been exposed to toxic substances or physical or radiological agents in excess of allowable limits during the course of a project at the INEEL.

NOTE: In the event of an illness or injury, the decision to provide first aid and transport to the nearest medical facility or whether to immediately request an ambulance and continue to stabilize and provide first aid should be based on the nature of the injury or illness and likelihood that transporting the individual may cause further injury or harm. Most likely, the person making this decision will only be trained to the medic first/CPR level and should contact the CFA medical facility at 777 or 526-1515 for further guidance if there is any question as to the extent of injury or potential to cause further harm by movement of the injured individual.

In the event of a known or suspected injury or illness caused by exposure to a hazardous substance or physical or radiological agent, the employee will be transported to the nearest INEEL medical facility for evaluation and treatment, as necessary. The FTL or STR and HSO are responsible for obtaining as much of the following information as is available to accompany the individual to the medical facility:

- Name, job title, work location, and supervisor's name and phone number
- Substance, physical or radiological agent exposed to (known or suspected), and material safety data sheet, if available
- Nature of the incident and injury or exposure and associated signs or symptoms of exposure
- First aid or other measures taken
- Locations, dates, and results of any relevant personal or area exposure monitoring or sampling
- List of PPE worn during this work (e.g., type of respirator and cartridge used).

Further medical evaluation will be determined by the treating or examining physician in accordance with the signs and symptoms observed, hazard involved, exposure level, and specific medical surveillance requirements established by the OMP director in compliance with 29 CFR 1910.120.

NOTE: In the event of an illness or injury, subcontractor employees will be taken to the closest INEEL medical facility (CFA-1612) (if doing so will not cause further injury or harm) or be transported by INEEL ambulance to have an injury stabilized before transport to the subcontractor's treating physician or off-Site medical facility.

The INTEC shift technical lead and project manager will be contacted if any injury or illness occurs at the project site. As soon as possible after an injured employee has been transported to the INEEL medical facility, the FTL or STR or designee will make notifications as indicated in Section 10.4.1, "Notifications."

RadCon personnel will evaluate all actual and/or suspected abnormal radiological exposures in excess of allowable limits and will establish the follow-up actions. For internal uptakes (as calculated committed effective dose equivalent values), applicable company documents and procedures will be used as the basis for this evaluation and followup actions. All wounds will be examined by an OMP physician to determine the nature and extent of the injury. The RadCon supervisor in conjunction with an OMP physician will determine whether the wound can be bandaged adequately for entry into a radiological contamination area in accordance with applicable company documents and procedures.

8.3 Substance-Specific Medical Surveillance

Project operations will involve the excavation, handling, packaging, and shipment of VES-SFE-20 tank waste contaminated with radiological and chemical constituents (see Tables 2-2 and 2-3). Additionally, asbestos abatement tasks will be conducted in conjunction with tank piping removal tasks. Several of the nonradiological waste constituents have OSHA substance-specific standards that govern the manner that personnel monitoring and medical surveillance is conducted (Table 8-1). These substances have exposure action levels (see Table 2-4) that trigger medical surveillance requirements. Based on the engineering controls to be used during asbestos abatement and other contamination area tasks (such as, confinement, barriers, and negatively pressured HEPA-filtered ventilation system) and work practices (wetting asbestos and use of spray fixative), exposure levels are not anticipated to reach regulatory medical surveillance action levels. Exposure monitoring will be conducted as described in Section 3 and as required by OSHA regulatory substance-specific standards. The IH should be consulted regarding applicability and implementation of substance-specific standards.

Table 8-1. Substance-specific regulatory medical surveillance action level for project chemicals.

Substance	Applicable Standard	Medical Surveillance Action Level
Asbestos	29 CFR 1910.1001	0.1 f/cm ³ 8-hour TWA
	29 CFR 1926.1101	1.0 f/ cm ³ excursion limit
Cadmium	29 CFR 1910.1027	2.5 µg/m ³ 8-hour TWA
Formaldehyde	29 CFR 1910.1048	0.5 ppm 8-hour TWA
		2 ppm STEL
Methylene chloride	29 CFR 1910.1052	25 ppm 8-hour TWA
		125 ppm STEL
f/ cm ³ = fibers per cm ³		ppm = parts per million
STEL = short-term exposure limit		µg/m ³ = micrograms per m ³

All project activities will be evaluated to determine the hazards and potential exposures to project personnel in accordance with applicable company policies and procedures. The IH and RadCon personnel will conduct exposure assessments for each operation to determine the potential for exceeding exposure limits. The regulatory requirements for each OSHA-mandated substance-specific standard will be reviewed against exposure monitoring data (where available) and in the context of the exposure potential by the IH using professional judgment. For project operations involving chemicals listed in 29 CFR 1910.1003, “13 Carcinogens,” and applicable company policies and procedures will be followed.

All exposures to ionizing radiation will be evaluated in accordance with applicable company manuals, and, where deemed appropriate, be controlled through the use of an RWP in accordance with applicable company policies and procedures.

If new contaminants of concern are identified during the course of VES-SFE-20 project activities, exposures will be evaluated and quantified to determine the exposure concentration. If regulatory mandated substance-specific standard action levels are triggered, then affected personnel will be enrolled in applicable substance-specific medical surveillance programs.

9. PERSONNEL ROLES AND RESPONSIBILITIES

The organizational structure for this project reflects the resources and expertise required to perform the work, while minimizing risks to worker health and safety, the environment, and the general public. The names of the individuals in key roles at the site, and lines of responsibility and communication, are shown on the organizational chart for the site (Figure 9-1). The following sections outline the responsibilities of key site personnel.

9.1 Project Personnel

Project personnel normally work at the project site to direct both contractor and subcontractor work in technical matters.

9.1.1 Project Manager

The project manager (PM) will ensure that all activities conducted during the project comply with applicable company policies and procedures; all applicable OSHA, Environmental Protection Agency, DOE, U.S. Department of Transportation, and State of Idaho requirements; and that tasks comply with the quality assurance project plan, this HASP, and the Sampling and Analysis Plan. The PM coordinates all document preparation, field, laboratory, and modeling activities. The INEEL PM is responsible for the overall work scope, schedule, and budget.

9.1.2 Field Team Leader

The FTL represents the ER organization at the site with delegated responsibility for the safe and successful completion of the project. The FTL works with the PM to manage field activities and to execute the project Remedial Design/Remedial Action Work Plan (DOE-ID 2003d). The FTL enforces site control, documents activities, and may conduct the daily safety briefings at the start of the shift. Health and safety issues may be brought to the attention of the FTL.

If the FTL leaves the site, an alternate individual will be appointed to act as the FTL. Persons acting as FTLs on the site must meet all the FTL training requirements outlined in Section 6 of this HASP. The identity of the acting FTL will be conveyed to site personnel, recorded in the FTL logbook, and communicated to the facility representative, when appropriate. All health and safety issues at the task site must be brought to the FTL's attention. The FTL may also serve as the HSO during low hazards activities.

9.1.3 Subcontractor Technical Representative

The STR is the individual representing construction management at the site when construction subcontractors are working. The STR manages construction field operations, enforces site controls, subcontractor requirements, and documents task-site activities. They may also conduct the daily plan of the day briefing at the start of the shift. All health and safety issues at the task site must be brought to the STR's attention. The STR also will serve as the primary area warden during the project.

If the STR leaves the project site, an alternate individual will be appointed to act as the STR. Persons acting as STR on the project site must meet all STR training requirements outlined in Section 6 of the project HASP. The identity of the acting STR will be conveyed to task-site personnel, recorded in the daily force reports, and communicated to the facility representative when appropriate. If the nature of the fieldwork requires involvement of field staffing by INEEL equipment operators, laborers, or other crafts, a representative from the organization supplying these additional resources interfaces with the STR to provide work supervision.

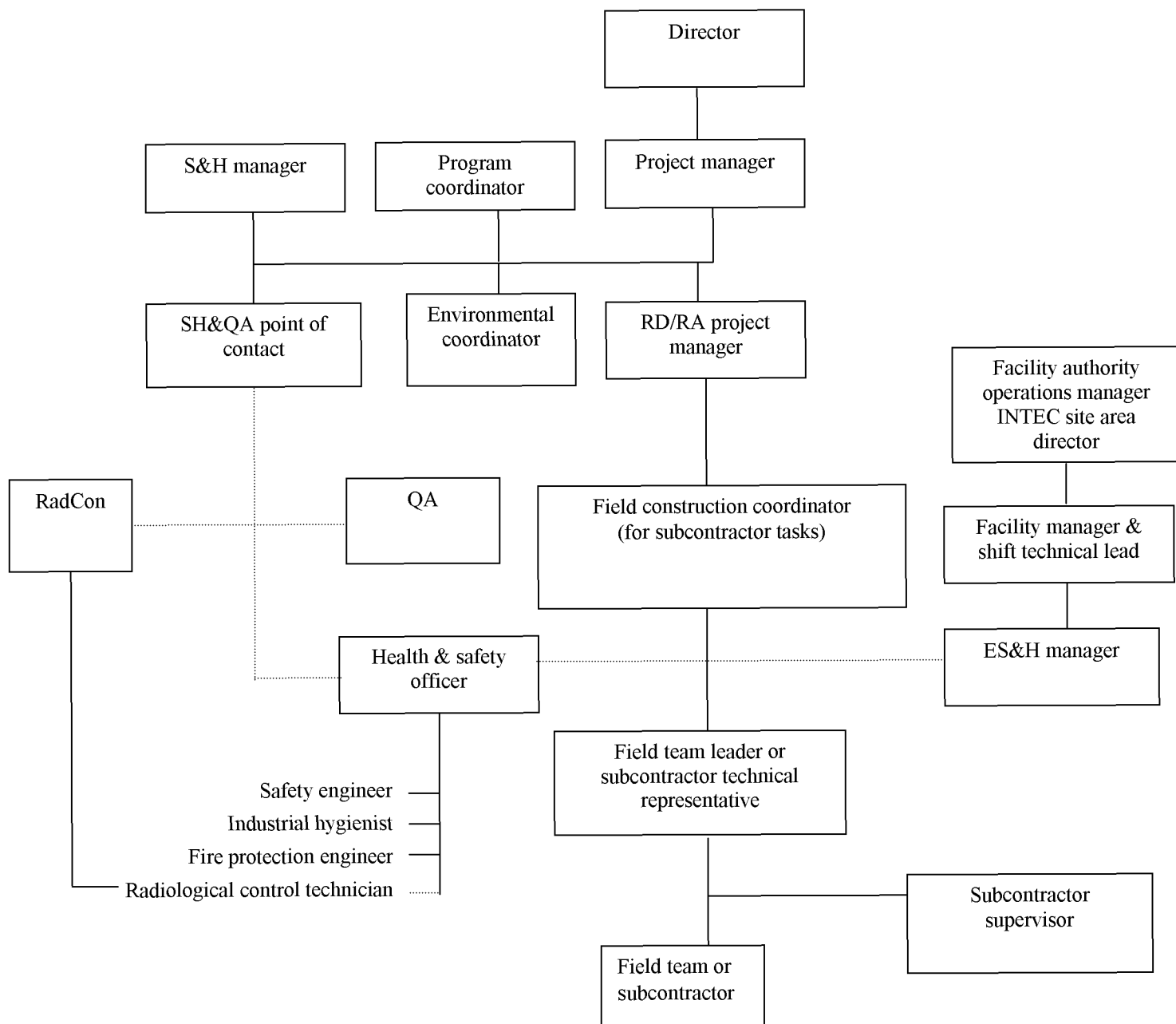


Figure 9-1. VES-SFE-20 project organizational chart.

9.1.4 Subcontractor Supervisor

A subcontractor may be used for completion of various project construction related and demolition tasks. If used, the subcontractor shall designate a supervisor to interface with the STR and or FTL and will also serve as the subcontractor safety representative/PM at the site. The subcontractor supervisor will direct all subcontractor personnel assigned to them at the project site. The subcontractor supervisor will work with the STR and FTL as a team to accomplish daily operations at the site, identify and obtain additional resources needed at the site, and interact with the HSO, IH, safety engineer, and RCT on matters regarding health and safety. The STR and FTL, must be informed about any health and safety issues that arise at the site and may stop work at the site if an unsafe condition exists. The subcontractor supervisor will provide information to the STR, FTL, and HSO, regarding the nature of their work as required by contract and upon request for input at the prejob briefing and tailgate safety meetings.

9.1.5 Site Personnel

All site personnel, including INEEL and subcontractor personnel assigned work activities at the VES-SFE-20 project site, will understand and comply with the requirements of this HASP. Hazards and mitigation will be communicated to site personnel at the start of each shift by the FTL or STR by conducting a formal prejob briefing or tailgate safety meeting. During the prejob briefing, all daily tasks, associated hazards, engineering and administrative controls, required PPE, work control documents, and emergency conditions and actions will be discussed. The project HSO, IH, and RadCon personnel will provide input to clarify task health and safety requirements. All personnel are encouraged to ask questions, regarding site tasks and provide suggestions on ways to perform required tasks in a more safe and effective manner, based on the lesson learned from previous day's activities.

Once at the site, personnel are responsible for identifying any potentially unsafe situations or conditions to the FTL, STR, or HSO for corrective action. **If at any time, site personnel discover an unsafe condition, at-risk behavior, or an environmental or quality deficiency, site personnel are authorized to stop work immediately, then notify the FTL, STR, or HSO of the unsafe condition.**

9.1.6 Health and Safety Officer

The HSO is the person assigned to the site who serves as the primary contact for health and safety issues. The HSO advises the PM, FTL, and STR on all aspects of health and safety and is authorized to stop work at the site if any operation threatens worker or public health and/or safety. The HSO may be assigned other responsibilities, as stated in other sections of this HASP, as long as they do not interfere with the primary responsibilities. The HSO is authorized to verify compliance to the HASP, conduct inspections, require and monitor corrective actions, monitor decontamination procedures, and require corrections, as appropriate. The HSO is supported by environmental, safety, and health/quality assurance (ES&H/QA) professionals at the site (safety engineer, IH, RCT, RE, environmental coordinator, and facility representative, as necessary).

Persons assigned as the HSO, or alternate HSO, must be qualified (per the OSHA definition) to recognize and evaluate hazards and will be given the authority to take or direct actions to ensure that workers are protected. While the HSO may also be the IH, or safety engineer (depending on the hazards, complexity, and size of the activity involved and requiring concurrence from the safety health and quality assurance manager) at the site, other site responsibilities of the HSO must not conflict with the role of the HSO. If it is necessary for the HSO to leave the site, the HSO will appoint an alternate individual to fulfill this role. The identity of the acting HSO will be communicated to site personnel. Persons assigned as acting HSO must meet all qualifications of the HSO.

9.1.7 Industrial Hygienist

The IH assigned to the project is the primary source for information regarding nonradiological hazardous and toxic agents at the site. The IH assesses the potential for worker exposures to hazardous agents according to applicable company policies, manuals, and procedures, and accepted industry IH practices and protocol. By participating in site characterization, the IH assesses and recommends appropriate hazard controls for the protection of site personnel, operates and maintains airborne sampling and monitoring equipment, reviews equipment for effectiveness, and recommends and assesses the use of PPE required in this HASP, recommending changes, as appropriate. Following an evacuation, the IH in conjunction with other recovery team members will assist the HSO in determining whether conditions exist for safe site reentry, as described in Section 10. Personnel showing health effects (signs and symptoms) resulting from possible exposure to hazardous agents will be referred to an OMP physician by the IH, their supervisor, or the HSO. The IH may have other duties at the site, as specified in other sections of this HASP, or in applicable company policies and procedures. During emergencies involving hazardous materials, airborne sampling and monitoring results will be coordinated with members of the Emergency Response Organization (ERO).

9.1.8 Safety Engineer

The assigned safety engineer reviews work packages, observes site activity, assesses compliance with the applicable company manuals, signs safe work permits (SWPs), advises the FTL and STR on required safety equipment, answers questions on safety issues and concerns, and recommends solutions to safety issues and concerns that arise at the site. The safety engineer may have other duties at the site, as specified in other sections of this HASP, or in applicable company policies and procedures.

9.1.9 Occasional Workers

All persons on the site who are assigned limited duties during low hazard activities or in low hazard areas of the project site are considered occasional workers (per 29 CFR 1910.120 and 29 CFR 1926.65) (such as a surveyor) and must meet minimum training requirements for such workers and any additional site-specific training that is identified in Section 6. A person will be considered “onsite” when present in or beyond the designated support zone (SZ). If the nature of a occasional workers tasks requires entry into the EZ, or radiologically controlled areas, then he/she must meet all the same training requirements to enter that area. Also, a project site representative must accompany all occasional workers until they have completed their required supervised field experience.

9.1.10 Visitors

All visitors with official business at the site, including INEEL personnel, representatives of DOE, and/or state or federal regulatory agencies, may not proceed beyond the SZ without receiving site-specific HASP training, signing a HASP-training acknowledgment form, receiving a safety briefing, wearing the appropriate PPE, and providing proof of meeting all training requirements specified in Section 6 of this HASP. A fully trained site representative (such as the FTL, STR, or HSO, or a designated alternate) will escort visitors at all times while on the site. A casual visitor to the site is a person who does not have a specific task to perform or other official business to conduct at the site. **Casual visitors are not permitted on the project site.**

9.2 Facility Support Personnel

Facility support personnel are assigned to the project bringing operational knowledge and technical support expertise.

9.2.1 Facility Authority Operations Manager

The INTEC site area director reports to the director of site operations and interfaces with the INTEC facility manager. The INTEC site area director is responsible for several functions and processes in the INTEC area that include the following:

- Performing all work processes and work packages
- Establishing and executing a monthly, weekly, and daily operating plan
- Executing the ES&H/QA program
- Executing the ISMS
- Executing enhanced work planning
- Executing the VPP
- Maintaining all environmental compliance
- Executing that portion of the voluntary compliance order that pertains to the INTEC area.

9.2.2 Facility Manager

The INTEC facility manager is responsible for maintaining his/her assigned facility, and must be cognizant of work being conducted in the facility. The INTEC facility manager is responsible for the safety of personnel and for the safe completion of all project activities conducted within his/her area. Therefore, the facility manager and INTEC shift technical lead will be kept informed of all activities performed in the area. The INTEC shift technical lead and FTL or STR will agree on a schedule for reporting work progress and plans for work. The shift supervisor may serve as advisor to site personnel with regard to his/her area of operation.

9.2.3 Radiological Engineer

The RE is the primary source for information and guidance, relative to the evaluation and control of radioactive hazards at the project site. The RE provides engineering design criteria and review of containment structures and makes recommendations to minimize health and safety risks to site personnel. Responsibilities of the RE include (1) performing radiation exposure estimates and ALARA evaluations, (2) identifying the type(s) of radiological monitoring equipment necessary for the work, (3) advising the FTL or STR and RCT of changes in monitoring or PPE, and (4) advising personnel on the site evacuation and reentry. The RE may also have other duties to perform, as specified in other sections of this HASP or in applicable company manuals.

9.2.4 Radiological Control Technician

The assigned RCT is the primary source for information and guidance on radiological hazards and will be present at the site during all activities. Responsibilities of the RCT include radiological surveying of the site, equipment, and samples; providing guidance for radioactive decontamination of equipment and personnel; and accompanying the affected personnel to the nearest INEEL medical facility for evaluation if significant radionuclide contamination occurs. The RCT will notify the FTL or STR whenever background levels of radiation are detected. The RWP may be canceled if levels are above those identified on the RWP. The RCT must notify the FTL or STR and HSO of any radiological occurrence that must be reported, and respond as directed by the applicable company manuals. The RCT may have other duties at the site as specified in other sections of this HASP or in applicable company policies and procedures.

9.2.5 Fire Protection Engineer

The assigned fire protection engineer reviews the work packages, conducts preoperational and operational fire hazard assessments, and provides technical guidance to site personnel regarding all fire protection issues. Additionally, the assigned project fire engineer will provide fire extinguisher training to all project team personnel as part of the site-specific training.

10. EMERGENCY RESPONSE PLAN

This emergency response plan defines the roles and responsibilities of personnel during an emergency. Such an emergency could be at the project site, INTEC, or a Site-wide emergency. This section provides details of the INEEL ERO and applicable company policies and procedures. This section defines the responsibilities of operations personnel and the INEEL ERO by providing guidance for responding to abnormal events during operational activities at the project site.

Applicable company policies and procedures may be activated in response to events occurring at the INTEC at the discretion of the emergency action manager (EAM). Once the INEEL plan is activated, project personnel will follow the direction and guidance communicated by the EAM.

NOTE: The OSHA HAZWOPER definition of an “emergency” is not defined the same as classified by DOE Orders 151.1A, “Comprehensive Emergency Management System,” and 232.1, “Occurrence Reporting and Processing of Operations Information.” For this reason, the term “event” will be used in this section when referring to project HAZWOPER “emergencies.”

10.1 Preemergency Planning

Applicable company policies and procedures provide the basis for preplanning all INEEL emergencies. This base plan is supplemented with INEEL facility-specific addendums. This preplanning makes it possible for the INEEL to anticipate and appropriately respond to abnormal events that can affect INEEL personnel. Preplanning also ensures that this project emergency response plan integrates with the established INEEL and INTEC emergency response programs. Specific procedures for addressing emergencies and actions to be taken are further described in the facility-specific emergency implementing procedures. Finally, this HASP addresses project-specific hazards, potential emergency events, and the actions to take following such events. Emergency response program planning elements that must be completed prior to the initiating activities at the project site include the following:

- Establishing project emergency warning signals and evacuation routes
- Implementing personnel accountability procedures
- Identifying emergency medical services and the personnel charged with performing those services
- Establishing effective site communications
- Establishing requirements for emergency equipment and supplies
- Establishing the preferred means for notifying the INEEL ERO of abnormal events.

NOTE: All project emergencies events will be reported through the INTEC shift technical lead (STL) to the ERO for classification in accordance with applicable company policies and procedures. If the INTEC ERO is activated, site emergency response will follow applicable company policies and procedures.

10.2 Emergency Preparation and Recognition

Previous HASP sections identified hazards, mitigation, and accident prevention strategies that will be followed at the project site. Similarly, emergency preparation and recognition will require project

personnel to be constantly alert for potentially hazardous situations and signs and symptoms of chemical exposure or releases. All project personnel must be familiar with the hazard recognition and mitigation processes, assigned action levels/associated actions to be taken as identified in Section 3.

Preparation and training on emergencies will include proper site access and egress procedures in response to project events and INEEL emergencies as part of the project-specific HASP training and site access training where applicable. Visitors also will receive this training on a graded approach based on their site access requirements. Visitor training will include, alarm identification, location and use of communication equipment, location of site emergency equipment, and evacuation. Emergency phone numbers and evacuation route maps will be located in project support zone or area.

On-scene response to and mitigation of site emergencies could require the expertise of both INTEC Incident Response Team (IRT) personnel and INEEL fire department personnel. Emergencies that could occur include

- Accidents resulting in injury
- Fires
- Spills of hazardous/radiological materials
- Tornadoes, earthquakes, and other adverse natural phenomena
- Vehicle or transportation emergencies
- Safeguard and security emergencies
- Events requiring emergency notifications
- Emergencies at nearby facilities that could prompt evacuation or take-cover actions at the task site.

10.3 Emergency Facilities and Equipment

Project emergency response equipment (Table 10-1), will be maintained at the project site. INTEC- applicable policies and procedures list emergency equipment available at INTEC. This includes the Emergency Control Center (ECC) located in Building CPP-652 at INTEC, and the IRT vehicle. Additional heavy construction and other equipment listed in applicable company policies and procedures are available for use during emergencies.

The INEEL fire department maintains an emergency hazardous material response van that can be used to respond to an event or emergency at the project site. Fire department personnel are also trained to provide immediate hazardous material spills and medical services. Additionally, the CFA-1612 medical facility is manned by medical personnel to evaluate and stabilize injured personnel or those experiencing signs and symptoms of exposure. At least one person with current medic/first-aid training will be present at the project site during operations.

Table 10-1. Emergency response equipment to be maintained at the project site during operations.

Equipment Name and Quantity Required	Location at Project Site	Responsible Person	Frequency of Inspection
Fire extinguishers ^a	Located throughout the decontamination facility, administration building, disposal cells, evaporation pond, and on each piece of heavy equipment	FTL or STR	Monthly
First aid supplies	Vehicles and construction trailer	FTL or STR	Inspect weekly and sign tag with annual inspection
Eye wash station ^b	At decontamination facility/treatment facility	HSO	Monthly or the frequency determined by the manufacturer
Eye wash bottle ^b	At disposal cells and evaporation ponds	HSO	Monthly or replace after use
Hazardous materials spill kit	At decontamination facility	FTL or STR	Monthly
Radiological spill kit	Located at the INTEC RadCon office	RCT	Restock following use
Communication equipment available	Onsite	FTL or STR	Availability and daily functional check

a. 10A/60BC extinguishers or as specified by the INTEC fire protection engineer.

b. An eye wash bottle will be used to provide an immediate eye flush if required. A portable eye wash station will be available at project site. Employees are instructed to use the bottles and immediately proceed to the eye wash station. An eye wash station will be available at the project site that meets the ANSI Z 358.1-1998 requirements. Eye wash stations will be located within 100 ft or 10 seconds from the EZ.

10.4 Emergency Communications

When a project emergency event occurs, the capability to summon INEEL emergency response resources to immediately notify INTEC personnel and others is necessary. Communications equipment at the project site will include a combination of radios, telephones (mobile, cellular, or facility), and pagers. The INTEC STL will be notified of any project emergency event and the STL will then make the required INTEC and INEEL ERO notifications.

10.4.1 Notifications

During emergency situations, the INTEC STL will be notified of any project emergency event by the FTL or STR or designated alternated. The INTEC STL will then make the required ERO and Warning Communications Center (WCC) notifications. The following information should be communicated, as available, to the INTEC STL:

- The caller's name, title (e.g., FTL, STR, or HSO), telephone number, and pager number
- Exact location of the emergency

- Nature of the emergency including time of occurrence, current site conditions, and special hazards in the area
- Injuries, if any, including numbers of injured, types of injuries, and conditions of injured
- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

NOTE: If the INTEC STL cannot be contacted then the WCC will be notified of the event and the information listed below communicated. The WCC also must be told that notification to the INTEC STL and EAM has not been made.

10.5 Personnel Roles, Lines of Authority, and Training

This section outlines personnel roles, lines of authority, and training necessary to conduct quick and effective emergency response activities.

10.5.1 The INEEL Emergency Response Organization

The INEEL ERO structures are based on the incident command system and are described in applicable company policies and procedures.

10.5.2 Role of Project Personnel in Emergencies

Depending on the event, a graded response and subsequent notifications will take place. FTL or STR and project personnel responsibilities are described below. Personnel will respond to emergencies only within the limits of their training and designated by their position. All personnel are trained to the facility-specific emergency actions as part of the INTEC access training or will be escorted by someone who has been trained. Emergency response actions also will be covered as part of the HASP training or orientation briefing.

10.5.2.1 FTL or STR. The FTL or STR (depending on who is at the tasks site) or designated alternate, is responsible for initiating all requests for project emergency services (fire, medical, etc.) and for notifying the INTEC STL of abnormal or potential abnormal events occurring at the project site. In addition, the FTL or STR or designated alternate, will serve as the project area warden as described in Section 10.5.2.3 below.

Additionally, the FTL or STR will control the scene until a member of the Incident Command System authority arrives at the scene to take control as the on-scene coordinator (OSC). When communicating emergency information to the OSC, the operations manager or designated alternate will provide all requested information regarding the nature of the event, potential hazards, and other information requested.

10.5.2.2 Project Personnel. Every person at the project site has a role to play during an project emergency event or INEEL emergency. Each employee must be alert for unexpected hazardous situations and immediately report these situations to the FTL or STR or designated alternate. All employees are expected to watch out for their fellow workers, to report their concerns to the FTL or STR, and to respond to emergency events, as provided for in this HASP. Specific project personnel responsibilities are outlined in Table 10-2.

Table 10-2. Responsibilities during an emergency.

Responsible Person	Action Assigned
Any project worker	Signal evacuation or take cover
Any fire-extinguisher-trained worker	Extinguish fires (incipient fires only) or contain spills (within level of training)
Any medic first aid/CPR-trained personnel	Provide first aid within level of training (on a voluntary basis)
FTL or STR or designee	Contact the INTEC shift technical lead or EAM (if ECC has formed)
FTL or STR or designee	Contact the INEEL site emergency telephone number or the WCC (if INTEC shift technical lead can not be contacted)
FTL or STR or designee	Conduct personnel accountability and report information to the INTEC shift technical lead or ECC
FTL or STR or designee	Report incipient fires to the INEEL fire department Report spills to the INEEL spill notification team
HSO	Report occupational injuries/illnesses to the OMP

10.5.2.3 Personnel Accountability and Area Warden. Project personnel are required to respond the project site or INTEC in response to TAKE COVER, EVACUATION, and local evacuation alarms. In each case, the FTL or STR, or designated alternate, shall account for the people present at the project site at the time the response action was initiated. The FTL or STR or trained alternate serves as the area warden for the project and completes the personnel accountability (following positive sweeps of the facility). The results of this accountability will then be communicated to the INTEC STL or EAM (if the ECC has been formed).

10.5.2.4 Spills. If the material spilled is known and is small enough to be safely contained, project personnel will handle spill control within their level of training (described below) using spill supplies in the project area and immediately report the incident to the FTL or STR and INTEC STL in turn. The INTEC EAM, in accordance with applicable company policies and procedures, will determine reporting requirements. If any release of a hazardous material occurs, task site personnel will comply with the following immediate spill response actions.

10.5.2.4.1 Untrained Initial Responder—The requirements for the untrained initial responder (or if the material characteristics are unknown) are listed below:

- Place equipment in a safe configuration
- **Evacuate** and **isolate** the immediate area
- Notify and then **seek help** from and **warn** others in the area
- Notify the FTL or STR.

10.5.2.5 Trained Responder. The requirements for the trained responder where material characteristics are known and no additional PPE is required are listed below:

- Place all equipment in a secure configuration

- **Seek help** from and **warn** others in the area
- **Stop** the spill if it can be done without risk (e.g., returning the container to the upright position, closing valve, and shutting off power)
- **Provide** pertinent information to the FTL or STR
- **Secure** any release paths if safe to do so.

10.6 Emergency Alerting, Responses, and Sheltering

This section discusses the emergency alerting, responses, and sheltering of personnel as part of emergency response activities.

10.6.1 Alarms

Alarms and signals are used at INTEC, the project site, and the INEEL to notify personnel of abnormal conditions requiring a specific response. These include radiation-monitoring alarms denoted by fast ringing bells and fire alarms, which vary from building to building within the INTEC area. Responses to these alarms are addressed in the general employee training. In addition to the alarms previously described, emergency sirens located throughout the INTEC serve as the primary means for signaling emergency TAKE COVER or EVACUATION protective actions.

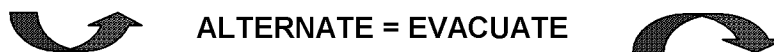
10.6.1.1 Take Cover—Continuous Siren. Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to an emergency situation and may precede an evacuation order. The order to TAKE COVER is usually announced by activating the emergency siren. The signal to take cover is a CONTINUOUS SIREN. The order to TAKE COVER is usually announced by activating the INTEC emergency siren.



However, the order to take cover also can be given by word of mouth, radio, or voice paging system. When ordered to TAKE COVER, project personnel will place the project site and equipment in a safe configuration (as appropriate) and then seek shelter in INTEC buildings as directed by the FTL or STR. Eating, drinking, and smoking are not permitted during take-cover conditions.

RadCon personnel will assist and direct all workers exiting from radiological contamination areas during a TAKE COVER alarm.

10.6.1.2 Total Area Evacuation—Alternating Siren. A total area evacuation is the complete evacuation of personnel from the entire INTEC area. The evacuation signal is an ALTERNATING SIREN.



When ordered to EVACUATE, project personnel will place the project site and equipment in a safe configuration (as appropriate) and then proceed along the specified evacuation route to the designated assembly area or as directed by the EAM. For total area evacuations, the ECC is activated and all personnel will gather at the primary INTEC evacuation assembly area or the location designated by the EAM. The FTL or STR or trained alternate will then complete the personnel accountability and report the result of the accountability process to the INTEC EAM.

RadCon, IH, and HSO personnel will assist and direct all workers exiting from radionuclide-contamination areas during an EVACUATION alarm. Eating, drinking, and smoking are not permitted during emergency evacuations.

NOTE: For total area evacuations, the INTEC ECC is activated and all personnel gather at the primary INTEC evacuation assembly area or the location designated by the EAM. The FTL or STR or trained alternate will then complete the personnel accountability using the attendance log or equivalent. In this situation, the FTL or STR reports the result of the accountability process to the INTEC EAM.

10.6.1.3 Local Area Evacuation. A local area evacuation is the complete evacuation of personnel from the project site, but it does not require the complete evacuation of the entire INTEC area. A single long horn blast (e.g., vehicle) will serve as the project's primary emergency evacuation signal (as listed on Table 10-3). However, the order to evacuate also can be given by word of mouth, radio, or voice. When ordered to evacuate the project site, personnel will place the site in a safe condition (as appropriate) and then proceed along the specified evacuation route to the assembly area designated for local area evacuations or as directed by the FTL or STR. Eating, drinking, and smoking are not permitted during emergency evacuations.

Facility RadCon personnel will assist and direct all workers exiting from radiological contamination areas during a evacuation alarm.

Table 10-3. Project internal emergency signals.

Device or Communication Method	Signal and Associated Response
Vehicle horn blasts	<p><u>One long blast</u>—Emergency evacuation, evacuate project site immediately. Proceed in an upwind direction to designated assembly area as specified by the FTL or STR.</p> <p><u>Two short blasts</u>—Nonemergency evacuation of immediate work area. Proceed to designated assembly area as specified by the FTL or STR.</p> <p><u>Three long blasts</u> or verbally communicated—All clear, return to project site.</p>

10.7 Evacuation Assembly Areas and Central Facilities Area Medical Facility

The INTEC maintain primary and secondary evacuation routes and assembly areas. These routes may be used in response to a total facility evacuation as directed by the INTEC EAM. Copies of the following figures (the HASP) will be available in the project support zone or area. These figures are

- Figure 10-1, INTEC evacuation routes and assembly area
- Figure 10-2, Map showing the route to the nearest medical facility (CFA-1612).

In the event that the project site is evacuated, personnel shall assemble in the designated INETC assembly area, or as directed by the FTL or STR, or trained alternate. If a total area evacuation of the INTEC is ordered, then project personnel shall relocate to the INTEC primary evacuation assembly area, or as directed by the EAM.

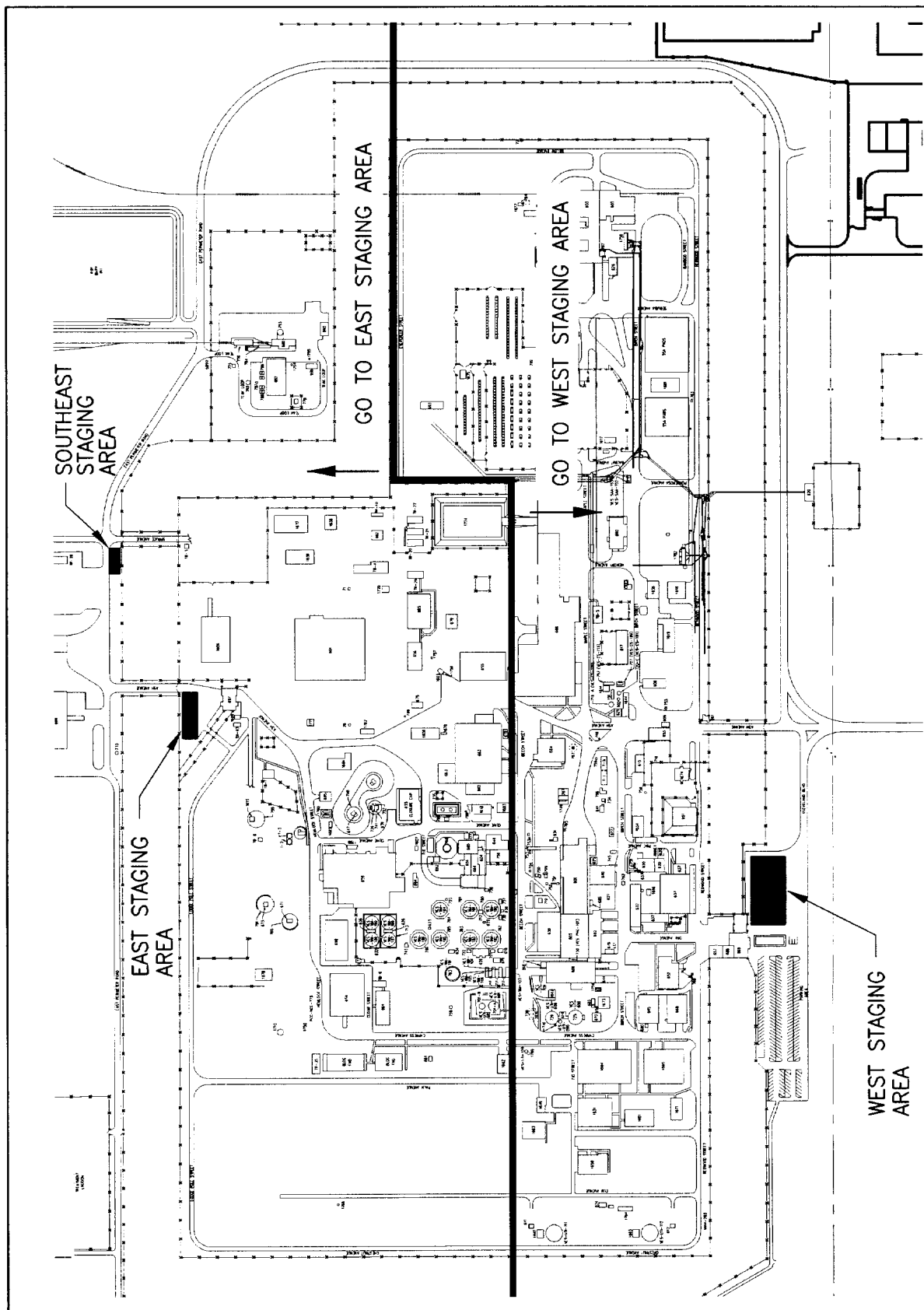
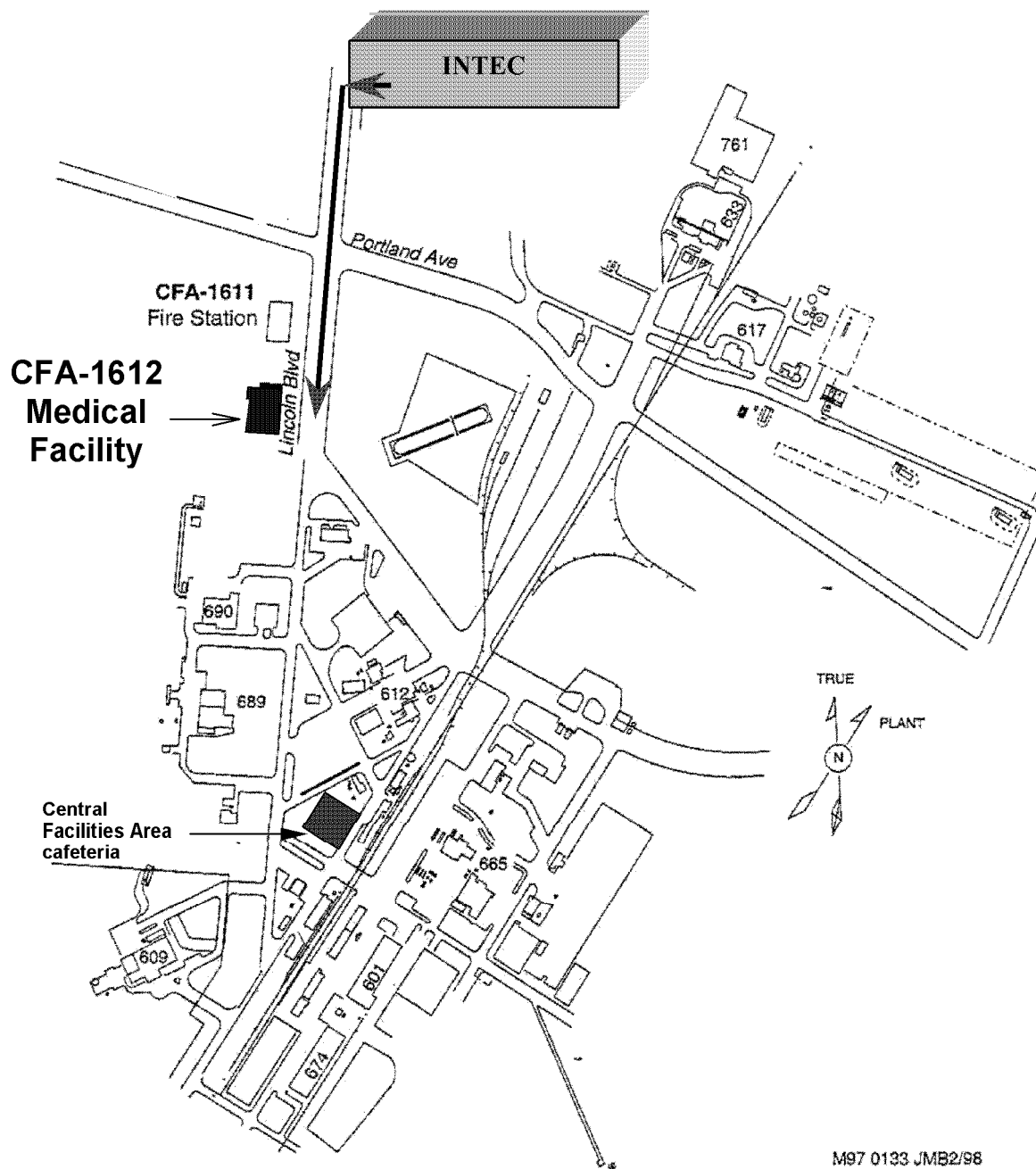


Figure 10-1. INTEC evacuation routes and assembly areas.



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Not to Scale

Figure 10-2. Map showing the route to the nearest medical facility (CFA-1612)

10.8 Medical Emergencies and Decontamination

Medical emergencies and responses to injuries or suspected exposures will be handled as stated in Section 8.2. Decontamination of personnel and equipment is described in Section 11.2.

10.9 Reentry, Recovery, and Site Control

All reentry and recovery activities will follow general site security and control requirements identified in Section 7 unless conducted as part of an emergency response action. All entries to the project site performed in support of emergency actions will be controlled by the OSC.

10.9.1 Reentry

During an emergency response it is sometimes necessary to reenter the scene of the event. Reasons for performing a reentry may include

- Performing personnel search and rescues
- Responding to medical first-aid needs
- Performing safe shutdown actions
- Performing mitigating actions
- Evaluating and preparing damage reports
- Performing radiation or hazardous material surveys.

Reentries will be carefully planned to ensure that personnel are protected from harm and to prevent initiating another emergency event. Reentry planning is undertaken as a graded approach depending on the nature of the initiating event.

10.9.2 Recovery

After the initial corrective actions have been taken and effective control established, response efforts will shift toward recovery. Recovery is the process of assessing postevent and postemergency conditions and developing a plan for returning to preevent and preemergency conditions, when possible, and following the plan to completion. The EAM are responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The project manager, with concurrence from the operations manager in consultation with the INTEC SAD, will appoint the recovery manager.

10.10 Critique of Response and Followup

A review and critique will be conducted following all emergency events, drills, and exercises at the INEEL. In some cases, an investigation may be required before commencing recovery actions. For this reason care should be exercised to preserve evidence when appropriate.

10.11 Telephone and Radio Contact Reference List

Table 10-4 lists the points of contact for the project. A copy of this list will be available at the project site (such as in the FTL logbook, project vehicles or other location) at all times. Because personnel listed may change frequently, working copies of this list will be generated as required to note new positions and changes of personnel assigned. This HASP should not be revised with a document action request to note these changes and the working list will be used as the official list.

Table 10-4. Project emergency contact list.

Contact Title	Contact Name	Phone Number or Radio Net	Cellular Phone Number	Pager Number
Fire, medical emergency, and security Warning Communications Center	NA	777 526-1515	NA	NA
INTEC shift supervisor	NA	6-3100	NA	NA
Facility authority operations director	Riley Chase	6-0018	521-6916	5669
Environment, safety, and health manager	Corrine Jones	6-8079	520-4191	5728
Radiological Control supervisor	Keith Branter	6-2486	520-6485	5572
Radiological engineer	John Arrowood	6-4497	NA	5223
DOE/ID facility representative	Rachael Collins Hall	6-1661	NA	3422
Manager of projects	Doug Kuhns	6-8226	521-5560	6670
Project manager	R. Lee Davison	6-3770	520-3707	5744
Field team leader	TBD			
Subcontractor technical representative	TBD			
Health and safety officer	Larry McManamon	6-3658	521-8405	4903
Safety professional	Larry McManamon	6-3658	521-8405	4903
Industrial hygienist	Jonathan D. Roberts	6-5386	NA	3351
Project director	Richard Loos	6-4561	520-1189	6602
Environmental compliance	Lee Tuott	6-7990	NA	7855

11. DECONTAMINATION PROCEDURES

It is anticipated that contamination (radiological and potentially chemical from process lines) will be encountered during the course of Phase I and II activities. Some cleanup of contaminated vault surfaces, debris, and some associated articles will likely be required (depending on the on the waste disposition path and nature of the contamination). Every effort will be made to prevent contamination of project personnel and equipment through the use of engineering controls, isolation of source materials, contaminant monitoring, personnel contamination control training, and by following material handling requirements and procedures for contaminated or potentially contaminated materials. Where contact with known or potentially contaminated surfaces is anticipated, engineering controls, in combination with PPE upgrades, will be necessary to control the contact hazard. This section provides guidance on how decontamination it will be performed where engineering controls and PPE do not prevent contamination or decontamination is determined to be required.

Engineering controls, in conjunction with contamination prevention and control practices and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. Applicable company policies and procedures contain information on personnel radionuclide decontamination. Radionuclide decontamination operations required for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel

11.1 Contamination Control and Prevention

Contamination control and prevention procedures will be implemented to minimize personnel contact with contaminated surfaces if such surfaces are encountered or may be contacted during project activities. The use of engineering controls, protective barriers, spray fixative, protective clothing, modified work control practices, or addition of hold points and surveys will all be used to minimize direct contact with contaminated surfaces. The following contamination control and prevention measures will be employed where contamination is encountered or anticipated:

- Identify potential sources of contamination and design containment, isolation, and engineering controls to eliminate or mitigate any potential for contact or release of contaminants (e.g., spray fixative)
- Limit the number of personnel, equipment, and materials that enter the contaminated area
- Implement immediate decontamination procedures to prevent the spread of contamination (if contamination is found on the outer surfaces of equipment)
- Use only the established control entry and exit point from the contaminated area to minimize the potential for cross-contamination and expedite contamination control surveys
- Wear disposable outer garments and use disposable equipment (where possible)
- Use hold points defined in procedures and work orders to monitor for contamination where anticipated.

11.2 Equipment and Personnel Decontamination

Where available, decontamination procedures will be used for decontamination equipment, tools, and sampling equipment (as required). Both radiological and nonradiological contamination will be evaluated when decontaminating surfaces.

Radionuclide decontamination operations for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel. Nonradionuclide decontamination will be conducted in accordance with established equipment decontamination procedures. The IH will determine the most appropriate PPE for such decontamination tasks on a case-by-case basis. In all cases, the collection, storage, and disposal of decontamination waste will be addressed prior to its generation (whenever possible). Protective clothing and respiratory protection selected for decontamination tasks will be based on the contaminant being decontaminated, applicable technical procedure, and JSA requirements.

11.2.1 Equipment Decontamination

Equipment used during Phase I and II activities may become contaminated from contact with contaminated surfaces or tank/piping contents. Once removed contaminated piping and debris will be placed in waste containers. Other isolation controls will be established such as spraying contaminated surfaces with fixative and establishing containment areas to prevent contamination of collocated structures and equipment from known or suspected sources of contamination. These controls will serve to isolate and eliminate or mitigate many of the potential contamination pathways to prevent equipment contamination and greatly reduce the need for decontamination.

When required, equipment decontamination will be conducted in accordance with applicable decontamination procedures where available. Low-cost consumable items will be discarded if initial decontamination efforts fail or extensive decontamination is required that is not in accordance with ALARA principles.

11.2.2 Personnel Decontamination

Engineering controls (such as negatively HEPA filtered containment areas), in conjunction with, work control practices, and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. The PPE selection, as identified in the RWP and JSA, will provide for a layered approach to prevent permeation of contaminants and minimize external surface contamination.

Where radiological contamination areas are established, procedures for donning and doffing protective clothing will be posted at the entrance and exit to the area. Prior to donning PPE, all items will be inspected following the list in Table 9-2 in Section 9 of this HASP. The greatest potential for personnel contamination exists from improper doffing of contaminated protective equipment when exiting a contamination area.

11.2.3 Decontamination in Medical Emergencies

If a person is injured or becomes ill, they should be immediately evaluated by first-aid-trained personnel (within their level of training and on a voluntary basis) at the project site. If the injury or illness is serious, then the FTL or STR will contact the INTEC shift technical lead or the WCC (if the shift technical lead cannot be reached) to summon emergency services.

Medical care for serious injury or illness will not be delayed for decontamination. In such cases, gross decontamination may be conducted by removing the injured person's outer protective clothing (if possible) and other contaminated areas with a bag, glove, etc. If contaminated PPE cannot be removed without causing further injury (except for the respirator, which must be removed), potentially contaminated areas of the individual will be wrapped in plastic, blankets, or available material to help prevent contaminating the inside of the ambulance, medical equipment, and medical personnel.

The IH and/or RCT (depending on the type of contamination) shall accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel. Contaminated PPE will then be removed at the Central Facilities Area medical facility (CFA-1612) and carefully handled to prevent the spread of contamination. Applicable company policies and procedures contain information on proper handling of radionuclide-contaminated wounds.

11.3 Doffing Personal Protective Equipment and Decontamination

Personnel decontamination will likely be limited to doffing of PPE following decontamination tasks. However, some preliminary surface decontamination of protective clothing may be required if it is grossly contaminated and the potential for the generation of airborne radioactivity or organic vapor emissions exists. This will involve assistance from other personnel inside the contamination area and at the doffing location as described below. The ultimate goal of all decontamination methods is to effectively and efficiently isolate the source of contamination through removal of protective clothing and containment in a sealed bag or waste container.

If contamination is detected on outer PPE layers, **careful removal of these outer PPE layers will generally isolate over 99% of surface contamination** and this will serve as the primary decontamination method if protective clothing is contaminated. Removal of contaminated protective clothing using standard radiological doffing techniques (rolling outer surfaces inward and from top to bottom while being removed) provides the most effective method for containing and isolating the contaminants and greatly reduces the potential for exposure to other personnel who would be put at risk of cross-contamination from other decontamination methods (washing, brushing, etc.).

If the protective clothing also is worn as an anti-C layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted sequence. All PPE will be placed in the appropriately labeled waste-disposal containers. Doffing and any required decontamination will take place at the designated work area boundary or in a contamination Radiological Buffer Area (RBA) or step-off pad (if a radiological-contamination area is established). If exiting a radiologically controlled area, personnel will conduct the proper personal survey, as stated in the RWP.

A general approach for doffing modified Level D, Level C, or modified Level C PPE is described below. However, there is no one doffing strategy that works for all circumstances. Modifications to this approach are appropriate if project conditions change or at the discretion of the HSO in consultation with the IH and RadCon personnel. Both radiological and nonradiological hazards will be evaluated, as applicable.

11.3.1 Modified Level D Personal Protective Equipment Doffing and Decontamination

Modified Level D protective clothing (Tyvek coveralls, booties, etc.) will be doffed following standard radiological removal techniques and will constitute the initial decontamination step. If the protective clothing is also being worn as an anti-C layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted doffing sequence. All PPE will be placed in the appropriately labeled waste container(s) disposal. Doffing and any required decontamination will take

place at the contamination RBA/step-off pad boundary (if a radiological contamination area is established). Doffing will be followed by conducting a personal contamination survey, as stated in the RWP.

11.3.2 Level C Personal Protective Equipment Doffing and Decontamination

If respiratory protection is worn in conjunction with protective clothing (e.g., Level C PPE), the modified Level D sequence will be followed with one additional step. Following protective-clothing doffing, respirators will be removed and placed in a separate container. Doffing and any required decontamination will take place at the designated work area boundary or in a radiological contamination buffer area, or step-off pad if a radiological-contamination area is established. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP.

11.4 Personnel Radiological Contamination Monitoring

Radiological surveys (with hand-held detectors and automated whole-body counters) may be required before exiting INTEC area, as determined appropriate by RadCon personnel or as stated in the RWP. The purpose of this hand-held instrument survey is to detect surface contamination. An automated whole-body survey using a PCM station (or equivalent) must still be conducted prior to utilizing designated eating or smoking areas. If required, this survey will be conducted using an existing PCM or other available hand-held instrument as directed by RadCon personnel.

11.5 Storage and Disposal of Operational Waste Materials

Waste generated from decontamination and other VES-SFE-20 Phase I and II activities will be properly characterized, stored, and disposed of in accordance with applicable company manuals, available Waste Disposal and Disposition Forms, and as stated in the *Waste Management Plan for the VES-SFE-20 Hot Waste Tank System* (DOE-ID 2003b).

11.6 Sanitation and Waste Minimization

Project personnel will use washroom and restroom facilities located at INTEC. Potable water and soap are available at INTEC for personnel to wash their hands and faces.

Industrial waste materials will not be allowed to accumulate at the project site. Appropriate containers for industrial waste will be maintained at the project site. Personnel should make every attempt to minimize waste through judicious use of consumable materials. All personnel are expected to make good housekeeping a priority at the project site.

12. RECORDKEEPING REQUIREMENTS

This section lists the recordkeeping requirements necessary for this project.

12.1 Industrial Hygiene and Radiological Monitoring Records

The assigned IH will record airborne monitoring and sampling data (both area and personal) collected for project exposure assessments in the INEEL Hazards Assessment and Sampling System (HASS) database. All monitoring and sampling equipment will be maintained and calibrated in accordance with INEEL procedures and the manufacturer specifications. IH airborne monitoring and sampling exposure assessment data are treated as limited access information and maintained by the IH in accordance with applicable company manuals and procedures.

The INTEC-assigned RCT maintains a logbook of radiological monitoring, daily project operational activities, and instrument calibrations where instruments were used to document detection levels or conduct field screening of samples. Radiological monitoring records are maintained in accordance with applicable company manuals.

All other health, safety, and radiological records including inspections will be maintained in accordance with the appropriate and applicable requirements as identified in applicable company manuals and applicable INTEC supplements.

12.2 Records Management

The Administrative Record and Document Control (ARDC) office organizes and maintains data and reports generated by field activities. The ARDC office maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of project plans, this HASP, the quality program plan, the Quality Assurance Project Plan, and other documents pertaining to these operations are maintained in the project file by the ARDC office.

The INTEC-assigned RCT maintains a logbook of all radiological monitoring, daily site operational activities, and instrument calibrations where instruments were used to document detection levels or conduct field screening of samples. Radiological monitoring records are maintained according to applicable company policies and procedures.

The assigned IH will record airborne monitoring and/or sampling data (both area and personal) and input the information into the HASS if required to be collected. All monitoring and sampling equipment shall be maintained and calibrated per BBWI procedures and the manufacturer's specifications. Industrial hygiene airborne monitoring and sampling data are treated as limited access information and maintained by the IH per BBWI applicable manuals and procedures.

All additional project records will be maintained in accordance with applicable federal, state, companywide manuals, and INTEC-specific supplementals.

13. REFERENCES

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